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FLORA OF THE DISTRICT OF COLUMBIA.

ADVERTISEMENT.

The United States National Herbarium, which was founded by the Smithsonian Institution, was transferred in the year 1868 to the Department of Agriculture and continued to be maintained by that department until July 1, 1896, when it was returned to the official custody of the Smithsonian Institution. The Department of Agriculture, however, continued to publish the series of botanical reports entitled "Contributions from the United States National Herbarium," which it had begun in the year 1890, until, on July 1, 1902, the National Museum, in pursuance of an act of Congress, assumed responsibility for the publication. The first seven volumes of the series were issued by the Department of Agriculture.

W. deC. Ravenel,
Administrative Assistant to the Secretary,
in charge of the United States National Museum.

~~Bot Flora SI~~

SMITHSONIAN INSTITUTION
UNITED STATES NATIONAL MUSEUM

CONTRIBUTIONS

FROM THE

UNITED STATES NATIONAL HERBARIUM

VOLUME 21

FLORA OF THE DISTRICT OF COLUMBIA AND VICINITY

By A. S. HITCHCOCK and PAUL C. STANDLEY
WITH THE ASSISTANCE OF THE BOTANISTS
OF WASHINGTON

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PREFACE.

To a person walking in the country in search of rest from labor the wild plants are very friendly if he has a speaking acquaintance with them. Such an acquaintance is of untold value as a means of rest and recreation. Yet to most persons our books on botany, instead of opening the path to knowledge, close it with the barrier of technical language. Botanical science is beginning to recognize the prohibitive effect of this barrier and to take steps to open the path to the public. The Flora of the District of Columbia and Vicinity now presented for publication is provided with keys to the families, genera, and species, and in the preparation of these keys common words have been used extensively as substitutes for technical and unusual words. This is especially true of the key to the families, which is so written that a person with almost no knowledge of botany can trace a strange plant to its proper family. The identification of many of the native species is made still easier by the illustrations, and it is only the limitation of space and cost that has prevented the more extensive use of these photographic reproductions.

Frederick V. Coville,
Curator of the United States National Herbarium.

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FLORA OF THE DISTRICT OF COLUMBIA AND VICINITY.

By A. S. HITCHCOCK and PAUL C. STANDLEY.

INTRODUCTION.

For many years the botanists of Washington have had under consideration the project of preparing a flora of Washington to replace the excellent work of Lester F. Ward, entitled "Guide to the Flora of Washington and Vicinity," published in 1881 as Bulletin 26 of the United States National Museum. This work and other papers relating to the local flora are reviewed interestingly by Mr. P. L. Ricker in a recent paper summarizing botanical activity in the District of Columbia.[1]

According to Mr. Ricker, the first list of the plants of our region was included in the Florula Columbiensis.[2] The second list was compiled by John A. Brereton[3] and was based upon investigations made from 1825 to 1830 by the Botanical Club of Washington. In 1876 the Potomac Side Naturalists' Club issued the Flora Columbiana[4] in Field and Forest.

The best known account of our flora is that by Lester F. Ward,[5] mentioned above, usually known as Ward's Flora. There were six supplements to this.[6] In 1906 the names of the flowering plants and ferns of Ward's Flora and of the several supplements were included by Mr. P. L. Ricker in "A List of the Vascular Plants of the District of Columbia and Vicinity," mimeographed copies of which were distributed among Washington botanists. Besides these there are many articles dealing with certain groups, a list of which papers is included in the bibliography appended to Mr. Ricker's account referred to above.

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[1] A sketch of botanical activity in the District of Columbia. Journ. Washington Acad. Sci. **8**: 487, 516. 1918.

[2] Florula Columbiensis: or a list of plants found in the District of Columbia. Printed for the Washington Botanical Society. 1819.

[3] Florae Columbianae prodromus. 1830.

[4] Flora Columbiana. A catalogue of the plants growing without cultivation in the District of Columbia. By Dr. George Vasey, Prof. J. W. Chickering, Dr. E. Foreman, Prof. Wm. H. Seaman, and Mr. L. F. Ward, Committee of Potomac Side Naturalists'. Club. Field & For. **1**: 83–87. 1876. **2**: 13–15; 31–33; 45–46; 61–84; 86–88; 103–105. 1876. Includes 1,083 species. Addenda, op. cit. **3**: 145–164. 1878. Includes 112 species.

[5] Bull. U. S. Nat. Mus. **26**. Pp. 1–264, with map. 1881.

[6] 1. Ward, Lester F. List of plants added to the flora of Washington from April 1, 1882, to April 1, 1884. Proc. Biol. Soc. Washington **2**: 84–87. 1884.

2. Knowlton, Frank H. Additions to the flora of Washington and vicinity from April 1, 1884, to April 1, 1886. Op. cit. **3**: 106–132. 1886.

3. Holm, Theodor. Third list of additions to the flora of Washington, D. C. Op. cit. **7**: 105–132. 1892.

4. Holm, Theodor. Fourth list. Op. cit. **10**: 29–43. 1896.

5. Holm, Theodor. Fifth list. Op. cit. **14**: 7–22. 1901.

6. Steele, Edward S. Sixth list of additions to the flora of Washington, D. C.; and vicinity. Op. cit. **14**: 47–86. 1901.

The plan of the present Flora was announced at the annual meeting of the Botanical Society of Washington in the spring of 1915. This plan involved the cooperation of 28 botanists under the leadership of Frederick V. Coville and A. S. Hitchcock, each being responsible for certain families or genera. During the first season keys to the genera and species of nearly all the families were prepared by the contributors and mimeographed copies were distributed, in order that they might be tested for one collecting season. The contributors prepared the finished manuscript in 1917. In 1916 Mr. Coville withdrew from active participation in the work and the leadership was assumed by A. S. Hitchcock and Paul C. Standley.

Following is a list of the persons who have contributed the final text and of the groups assigned to each.

BALL, C. R.: *Salix*.

BLAKE, S. F.: Juncaceae (in part).

CHASE, AGNES: Poaceae (in part), Cyperaceae (except *Carex*), Xyridaceae, Eriocaulaceae, Ceratophyllaceae.

COVILLE, F. V.: Juncaceae (in part), Ericaceae, Vacciniaceae.

EGGLESTON, W. W.: Malaceae.

HILLMAN, F. H.: Cuscutaceae.

HITCHCOCK, A. E.: Solanaceae.

HITCHCOCK, A. S.: Poaceae (in part), Podostemaceae, Penthoraceae, Saxifragaceae, Hydrangeaceae, Escalloniaceae, Grossulariaceae, Hamamelidaceae, Platanaceae, Rosaceae, Amygdalaceae, Aceraceae, Clethraceae, Pyrolaceae, Monotropaceae.

LEWTON, F. L.: Malvaceae.

MCATEE, W. L.: Sparganiaceae, Potamogetonaceae, Naiadaceae, Pontederiaceae, Callitrichaceae, Caprifoliaceae.

MAXON, W. R.: Pteridophyta, Polygonaceae, Primulaceae, Orobanchaceae, Phrymaceae, Valerianaceae, Dipsacaceae, Campanulaceae, Lobeliaceae, *Antennaria*.

NORTON, J. B.: Lemnaceae, Melanthiaceae, Liliaceae, Convallariaceae, Smilacaceae, Amaryllidaceae, Iridaceae.

NORTON, J. B. S.: Commelinaceae, Euphorbiaceae.

ROSE, J. N.: Crassulaceae, Cactaceae, Apiaceae.

ROSEN, H. R.: Dioscoreaceae, Anacardiaceae, Hypericaceae, Elatinaceae, Cistaceae, Lythraceae, Melastomataceae, Onagraceae, Haloragidaceae.

SAFFORD, W. E.: Magnoliaceae, Annonaceae, Lauraceae, Passifloraceae, Cucurbitaceae.

SKEELS, H. C.: Orchidaceae.

SMITH, C. P.: Asclepiadaceae, Convolvulaceae, Polemoniaceae, Hydrophyllaceae.

STANDLEY, P. C.: Araceae, Saururaceae, Urticaceae, Loranthaceae, Santalaceae, Aristolochiaceae, Chenopodiaceae, Amaranthaceae, Allioniaceae, Phytolaccaceae, Aizoaceae, Portulacaceae, Corrigiolaceae, Alsinaceae, Silenaceae, Nymphaeaceae, Cabombaceae, Ranunculaceae, Berberidaceae, Menispermaceae, Papaveraceae, Fumariaceae, Brassicaceae, Capparidaceae, Sarraceniaceae, Droseraceae, Caesalpiniaceae, Fabaceae, Geraniaceae, Oxalidaceae, Linaceae, Rutaceae, Simaroubaceae, Limnanthaceae, Impatientaceae, Rhamnaceae, Violaceae, Araliaceae, Cornaceae, Loganiaceae, Gentianaceae, Apocynaceae, Boraginaceae, Verbenaceae, Scrophulariaceae, Bignoniaceae, Pinguiculaceae, Acanthaceae, Plantaginaceae, Rubiaceae, Cichoriaceae, Ambrosiaceae, Asteraceae.

TIDESTROM, I.: Pinaceae, Typhaceae, Vallisneriaceae, *Populus*, Myricaceae, Juglandaceae, Betulaceae, Fagaceae, Ulmaceae, Moraceae, Aquifoliaceae, Celastraceae, Staphyleaceae, Vitaceae, Tiliaceae, Daphnaceae, Diospyraceae, Oleaceae.

VAN ESELTINE, FLORENCE L.: Polygalaceae.

VAN ESELTINE, G. P.: Alismaceae, *Carex*, Menthaceae.

The following persons aided in the preparation of the preliminary keys: C. V. Piper, P. L. Ricker, P. G. Russell, E. S. Steele, S. C. Stuntz.

Two keys to families have been prepared, a natural key by Mr. Hitchcock (including keys to families of Pteridophyta by Mr. Maxon), and an artificial key by Mr. Standley. The introduction is by Mr. Hitchcock and the glossary by Mr. Maxon.

The introductory account of the flora of the region is not so full as might be thought desirable. A detailed presentation of the relations of the flora to the vegetation of the surrounding areas, however, is not regarded as essential in a work intended primarily as a classified list of the species. It is hoped that the present volume will stimulate interest in the phytogeography of the region and serve as a basis for an analysis of the flora by those who may have opportunity to study the subject for a longer period.

The area included by the Flora is approximately a circle of 15 miles radius, with the Capitol as the center, this area being practically that of Ward's Flora, though it is not intended to exclude from consideration localities that lie a short distance outside the 15-mile circle. The maritime flora of the shore of Chesapeake Bay and of the lower Potomac River is excluded, as is also that of the Patuxent Valley. In the main, the local area reaches to Bowie, Upper Marlboro, and Brandywine on the east, Mount Vernon on the south, Great Falls on the west, and Rockville and Oak Crest on the north.

The formal list includes all indigenous plants and all introduced ones that have become established. Many species have been collected only once, or sometimes oftener but under circumstances which indicate that they are waifs or chance introductions and are not to be considered a part of our flora. Such species are mentioned in notes appended to an allied species or genus. It has not always been possible definitely to determine whether these stray individuals are to be considered a part of our flora, and the decisions in this respect may not be consistent; but rare specimens of species native in this general region may usually be assumed to be indigenous, while those that belong to introduced species may require proof that they are established.

All the species admitted to the formal list are based upon specimens in the District Flora Herbarium, which has been segregated from the main collection of the National Herbarium. Species reported[1] but which are not supported by specimens have been mentioned in notes. All the species listed in Ward's Flora and its Supplements have been accounted for, even though they can not now be verified by specimens. Some of these are accounted for by synonymy; others are shown by the specimens to be errors of identification; a few of which there are no specimens in the Herbarium have been mentioned in notes.

The more commonly cultivated species have been noted under the family or genus to which they belong. No attempt has been made to include the vast array of ornamental plants of greenhouses and parks, except a few of the well-known species, such as trees that are planted along the streets.

The nomenclature is in accord with the American Code of Botanical Nomenclature, except that so-called duplicate binomials are not used.

Synonyms have been given where necessary to coordinate the names with Gray's Manual, Britton and Brown's Illustrated Flora, and Ward's Flora. Errors of identification in Ward's Flora have been indicated thus, *Erianthus alopecuroides* of Ward's Flora.

Mr. L. V. Hallock contributed the photographs for plates 5, 8, 15, 18, 19, 20B, 25, 28, 29, 30, 31, 34, 37, 39, 41; Mr. E. L. Crandall those for plates 11, 17, 20A, 26, 35, 36; the photographic laboratory of the Department of Agriculture that for plate 13; Mr. Hitchcock furnished those for the remainder.

The geology of the region as related to the flora has been briefly discussed by Edgar T. Wherry.[2] The chief physiographic feature is the "fall line," which separates the Piedmont Plateau on the northwest from the Coastal Plain on the southeast, being named from the fact that the rivers and smaller streams, flowing southeastward to the sea, often have waterfalls or rapids near this line. On a topographic map of the region the course of the fall line can be readily traced by the change in the contours along the stream valleys. Northwest of the line the streams run in narrow steep-sided gorges, the contour lines being close together for some distance back of the stream; typical illustrations of this are shown in plates 5, 6, and 7. Southeast of it they have broad open valleys marked by wide spacing of the contour lines. This is shown by the following streams: Back Lick Run and Holmes Run near Lincolnia, Fourmile Run at Barcroft, the Potomac River below Georgetown, Sligo Branch near Riggs School, Northwest

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[1] See footnotes on page 13.

[2] In a paper read before the Botanical Society of Washington and abstracted in the Journal of the Washington Academy of Sciences (**7**: 435. 1917).

Branch at Riggs Mill (Pl. 3), where the change is most strongly marked, and Paint Branch near Paint Branch School (Pl. 1). Characteristic Coastal Plain views are shown also in plates 10 and 13.

The geological formations of the Piedmont Plateau are chiefly crystalline gneisses of early periods, among which may be mentioned the Carolina gneiss, granite gneiss, diorite, biotite, granite, and basic igneous rocks, including gabbro, meta-gabbro, and serpentine.

The Coastal Plain is occupied by unconsolidated gravels, sands, and clays deposited during successive advances of the sea in Cretaceous, Tertiary, and Quaternary periods. Gravels also occur to some extent as cappings on the hills along the edge of the Piedmont. Bogs are frequent on the Coastal Plain and rare on the Piedmont. Lime is often present in notable amount in the soils of the Piedmont through concentration by means of accumulations of leaf mold, although there are no highly calcareous rocks in the vicinity. Acid soils are predominant on the Coastal Plain. The relation of soils to the floras of the two regions is illustrated by the distribution of the lily family and its allies. Those species limited to calcareous soils and found chiefly on the Piedmont Plateau are *Allium tricoccum*, *Vagnera stellata*, *Melanthium latifolium*, and *Trillium sessile*. Those limited to noncalcareous or acid soils and found chiefly on the Coastal Plain are *Aletris farinosa*, *Tofieldia racemosa*, *Melanthium virginicum*, and *Stenanthium gramineum*. The other species of the Liliales grow throughout the region and apparently have no marked soil preference.

The floras of the two physiographic areas are noticeably different, though there are many species common to the two regions. In the Piedmont region there is a marked intrusion of mountain and northern plants, these being found especially along the steep banks of the Potomac and of the ravines leading into it, and along Rock Creek and its western tributaries. The uplands, when not under cultivation, for the most part represent land previously cultivated and now covered with second growth forest or waste fields. The original flora was less characteristically mountain than that which occupies the ravines.

The Potomac Valley region is easily accessible and offers a most convenient and delightful field for a study of the spring flora. One of the three trolley lines extending in this direction terminates at Cabin John, from which the pedestrian may explore the left bank of the Potomac and the ravines which enter the main valley at intervals above. Though the residential district is extending up the Potomac, there are still many ravines and banks between Georgetown and Cabin John of interest to the collector. These may be reached from the trolley line or from the Conduit Road, which follows this line and continues to Great Falls. The other two of the three trolley lines connect Washington with Great Falls (Pl. 8B). They pass along the high land skirting the heads of the ravines, one on the Maryland side, the other on the Virginia side. By taking the trolley to a station near the head of a ravine on the south side, one can make a trip down the ravine to the river, along the steep bank of the river to the next ravine, and, ascending this, return by trolley. On the north side one may do the same, or the return can be made along the road or towpath to Cabin John. There are four larger ravines below Great Falls on the south side: Difficult Run (Pl. 4), Bullneck Run, Scotts Run, and Dead Run. Farther down is Pimmits Run, which enters the main valley near Chain Bridge. On the north side a pleasant trip can be made by getting off the trolley at Ferndale and going down Cabin John Run to Cabin John Bridge.

The Chesapeake and Ohio Canal extends from Georgetown to Great Falls and on to Cumberland, following the left bank of the Potomac. The flora along the canal is of especial interest, as the original species have been preserved from destruction by animals and from the encroachment of agricultural operations and residential sections. In the water of the canal and along the margin are numerous aquatic and semiaquatic plants. The cliffs and banks are the home of many species that are not easily accessible elsewhere. The towpath of the canal offers to the pedestrian the most convenient road for observing the plants of the Potomac Valley. (Pl. 8A).

Spring flowers are abundant in the valleys and on the alluvial slopes (Pl. 9). The earliest species of interest to the layman is the hepatica, soon followed by the bloodroot. Several weedy species with inconspicuous flowers bloom earlier in the season, or even during the winter months, when the weather is warm, or when growing in especially sunny or protected spots. The skunk cabbage, the earliest of the strictly spring flowers, is found widely distributed in our area in moist places, mostly in the woods. Other herbaceous species with showy flowers blooming in early April are the spring beauty, trout lily, wake-robin, twin-leaf, blue violet (*Viola sororia* and *V. papilionacea*), cream violet (*V. striata*), Dutchman's breeches, buttercup (*Ranunculus septentrionalis* and *R. hispidus*), pepper-root (*Dentaria heterophylla* and *D. laciniata*), harbinger-of-spring, bluebells, *Saxifraga virginiensis*, and *Alsine pubera*. A little later, usually the latter part of April, will be found *Phlox divaricata*, wild ginger, Jack-in-the-pulpit, columbine, golden ragwort, and cranesbill.

Among the woody plants the soft maple and the elms flower very early, often in February and March. The red maple, ashes, box-elder, and the catkin-bearing trees flower in April or early May. The redbud with red flowers and the June berry with white flowers are conspicuous in the woods before the trees produce their leaves. Somewhat later, but before the forest has come into full leaf, the flowering dogwood attracts attention. Spice bush is abundant and easily distinguished by the fragrance of the broken twigs.

Along the Potomac near Great Falls there are several species not found farther east. One of the most conspicuous of these is *Phlox subulata,* common on the rocks along the towpath. Other rock plants are *Sedum ternatum, S. telephioides,* and *Opuntia vulgaris.* On the bluffs of the right bank of the Potomac the hemlock is an interesting component of the forest flora.

Another region of the Piedmont easily accessible is Rock Creek Park, where plants may be observed though they may not be collected without permission (Pl. 2). The ravines and slopes harbor the original flora of the region and can be reached from many roads and paths. There are also several interesting valleys and wooded areas within easy walking distance of the Rockville trolley line. The upper valleys of Paint Branch and Northwest Branch lie in the Piedmont, but they are not easily accessible except by special conveyance.

The Coastal Plain region can be reached by any of the trolley lines leading northeast, east, or south from Washington.

Between the business part of Washington and Takoma Park, which lies about at the fall line, there are several localities mentioned in Ward's Flora which have now been converted into residential districts, but the vicinity of Takoma Park itself still offers much of interest. The trolley line to Laurel, lying in the valley of Indian Creek and Eastern Branch or Anacostia River, opens up fine collecting grounds. There is a long swamp or series of swamps on the east side of the Baltimore and Ohio Railroad from Hyattsville to Berwyn and on to Beltsville, the section from Berwyn to Beltsville being known as the Hollywood Swamp. The eastern sector of our region, lying outside the District and between the Baltimore trolley line and the lower Potomac, is not penetrated by electric lines, but steam railways are available. The Pennsylvania Railroad passes through Lanham and Bowie, the latter a station at the limit of the 15-mile circle, from which a branch extends south through Upper Marlboro and Brandywine to the lower part of the peninsula. The Chesapeake Beach Railroad joins a trolley line at the eastern corner of the District and runs to Upper Marlboro and Chesapeake Beach. A trolley line goes to Anacostia and on south to Congress Heights, from which point one can explore the valley of Oxon Run and the lower left bank of the Eastern Branch. A line of automobile busses runs from Washington to Brandywine and beyond, passing through Silver Hill, from which the Suitland bog may be reached, and through Camp Springs, from which one can go by a good road to Upper Marlboro.

Much of the region east and southeast of the District is fairly level upland occupied by cultivated fields and correspondingly uninteresting from a botanical standpoint, but here and there, especially along the streams, are bits of land supporting an indigenous flora.

One of the most interesting features of the Coastal Plain area is the bogs. These are discussed at length by W. L. McAtee in his "Sketch of the Natural History of the District of Columbia."[1] The bogs are there designated as magnolia bogs because one of the conspicuous plants found in them is *Magnolia virginiana.* One group of these, known as Powder Mill bogs, lies about 2 miles west of Ulles Crossing, a station on the trolley line south of Beltsville. There are three bogs in the vicinity, the best of which is near the crossroads, hidden in the woods and not visible from the road. A very interesting one is situated about one and a half miles southeast of Suitland, and there are several others scattered here and there. These bogs are usually on a sloping surface near a small stream and are underlaid with a stratum of gravel. The boggy covering may be very thin, and there are often spots of bare wet gravel. Surrounding these bogs is the usual forest growth, but within them the vegetation is herbaceous except for spots or islands of shrubs. There is more or less sphagnum and often an abundance of *Panicum lucidum.* Some of the characteristic plants are: *Lycopodium adpressum, Eriophorum virginicum, Rynchospora alba, Scleria pauciflora, Fuirena hispida, Xyris caroliniana, Eriocaulon decangulare, Tofieldia racemosa, Habenaria blephariglottis, Pogonia ophioglossoides, Limodorum tuberosum, Habenaria clavellata, Myrica carolinensis, Magnolia virginiana, Drosera rotundifolia* and *D. intermedia, Aronia melanocarpa, Amelanchier oblongifolia, Polygala cruciata, Rhexia virginica, Azalea viscosa, Kalmia angustifolia, Setiscapella subulata, Viburnum cassinoides, Eupatorium verbenaefolium.*

The lower Potomac region is rich in marsh plants. Much of the upper part of the Eastern Branch or Anacostia River estuary is occupied by an extensive marsh of Indian rice. There are marshes bordering the right bank of the Potomac between Washington and Mount Vernon. A convenient station for reaching this region is Dyke, from which one can penetrate the marsh on a long dike extending into the river. Here may be found pickerel-weed, *Peltandra virginica,* narrow-leaved cat-tail, yellow pondlily, pondweeds, and many other marsh and aquatic plants. The collector of aquatic plants should not fail to explore also the waters of the canal, where many pondweeds are found.

In contrast with the bogs and marshes are the dry sterile woods characterized by the presence of the laurel (*Kalmia latifolia*). Thickets of this evergreen shrub are conspicuous in winter and in early spring before the deciduous trees have produced their foliage (Plate 38). In such localities one finds several species of heaths, such as *Vaccinium vacillans*, *Gaylussacia baccata*, *Polycodium stamineum*, *Azalea nudiflora*, *Chimaphila umbellata*, and *C. maculata*. The characteristic grass of such localities is *Panicum ashei*. Similar to the laurel thickets are the pine and oak woods, consisting of *Pinus virginiana* and *Quercus marilandica*. In sandy pine woods one often finds the beautiful moccasin flower. Another type of barrens is found in the pure forests of scrub pine occurring on both the Piedmont and the Coastal Plain. The undergrowth is very sparse, consisting of such plants as *Pyrola secunda*, the two species of *Chimaphila*, *Mitchella repens*, and *Cypripedium acaule*.

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[1] Bull. Biol. Soc. Washington, Pp. 1–142. 1918.

Our knowledge of the flora of the Washington area is far from complete. Certain parts of the area are fairly well known; other parts are, so far as our records show, almost wholly unexplored. The best known parts are the District itself and a rather narrow zone around it; the valley of the Potomac from Great Falls to Alexandria for a mile or two back from the river; and the valley of Eastern Branch (or Anacostia River) as far as Beltsville. The unexplored parts lie in general toward the periphery of the fifteen-mile circle, especially from Mount Vernon to Vienna, and the sector from the Pennsylvania Railroad to the Potomac River. The region west of Brandywine is practically unknown botanically.

SYSTEMATIC TREATMENT OF THE VASCULAR PLANTS.

KEY TO THE FAMILIES (IN SOME CASES TO THE GENERA) BASED MAINLY ON VEGETATIVE CHARACTERS.

I. Trees and Shrubs.

Leaves needle-like or scalelike, or narrowly linear.
  Stems jointed, the joints flattened, succulent, armed with spines; fruit a juicy berry. **CACTACEAE** (p. 211).
  Stems not jointed or flattened, woody, unarmed; fruit a dry cone or a berry-like cone. **PINACEAE** (p. 60).
Leaves flat, broader than linear, never scalelike.

1. Leaves compound, composed of few or many leaflets.

Leaves opposite.
  Stems climbing, or clambering over other plants.
    Leaflets 3–7; corolla none, the 4 distinct sepals colored and petal-like; fruit of numerous hairy long-tailed achenes................**RANUNCULACEAE** (p. 156).
    Leaflets 9–11; corolla funnelform, orange, large and showy; sepals united; fruit a 2-celled capsule 10–15 cm. long........................**Bignonia** (p. 254).
  Stems erect, never climbing.
    Leaflets 3 or 5, never more.
      Plants shrubs; leaflets 3, finely toothed; flowers perfect, white or whitish; fruit bladder-like, 3-lobed......................**STAPHYLEACEAE** (p. 200).
      Plants trees; leaflets 3 or 5, coarsely toothed or lobed; flowers pistillate and staminate, greenish; fruit a double winged samara.......**Rulac** (p. 200)

Leaflets more than 5 in most of the leaves on each plant, but some of the leaves occasionally of only 5 leaflets.
  Plants trees; flowers pistillate and staminate, usually appearing before the leaves, in small clusters or in panicles; fruit a winged samara. **Fraxinus** (p. 227).
  Plants shrubs; flowers perfect, appearing after the leaves, in broad flat-topped cymes; fruit juicy, berry-like........ **Sambucus** (p. 261).

Leaves alternate.
 Stems armed with spines.
  Plants trees; fruit a flat pod.
   Leaves once pinnate; flowers very irregular, white or pinkish. **Robinia** (p. 185).
   Leaves twice pinnate; flowers regular or nearly so, greenish.. **Gleditsia** (p. 180).
  Plants shrubs; fruit not a flat pod.
   Leaflets numerous; flowers in umbels arranged in panicles; fruit a black juicy 5-celled drupe........ **ARALIACEAE** (p. 215).
   Leaflets 3–9; flowers not in umbels; fruit red........ **ROSACEAE** (p. 173).
 Stems without spines.
  Leaves of 3 or 5 digitate leaflets.
   Leaflets 3 (sometimes only 1), entire; plants erect; flowers showy, yellow, irregular; fruit a dry pod........ **FABACEAE** (p. 181).
   Leaflets 5, toothed; plants climbing by tendrils; flowers very small, greenish, regular; fruit a juicy black berry........ **Parthenocissus** (p. 201).
  Leaves pinnate, of 3 to many leaflets.
   Leaflets entire, or with one or 2 teeth near the base, numerous. Trees; fruit winged........ **SIMAROUBACEAE** (p. 193).
   Leaflets with numerous fine or coarse teeth, or rarely entire, the leaflets then only 3.
    Plants trees; flowers in catkins; fruit a nut. Leaflets 5 or more, aromatic. **JUGLANDACEAE** (p. 135).
    Plants shrubs; flowers not in catkins; fruit not a nut.
     Leaflets gland-dotted, 3, nearly entire; fruit winged; erect shrubs. **Ptelea** (p. 192).
     Leaflets not gland-dotted, 3 to many, conspicuously toothed; fruit a dry or slightly juicy drupe; erect or climbing shrubs. **ANACARDIACEAE** (p. 198).

2. Leaves entire, toothed, or lobed, but never compound.

A. LEAVES OPPOSITE.

Plants parasitic upon the branches of trees. Leaves entire, thick and leathery. **LORANTHACEAE** (p. 143).

Plants not parasitic.
 Mature leaves toothed or lobed.
  Plants trees; fruit a double samara. Leaves lobed; flowers yellow, green, or red. **ACERACEAE** (p. 200).
  Plants shrubs; fruit never a samara.
   Flowers borne in the axils of the leaves; fruit dehiscent, deeply 3–5-lobed; flowers greenish or purplish. Leaves finely toothed... **Euonymus** (p. 199).
   Flowers borne at the ends of the branches; fruit a small many-seeded capsule or a 1-seeded fleshy drupe, not lobed; flowers white.
    Corolla of 4 distinct petals; fruit a many-seeded capsule; leaves cordate-ovate, finely toothed........ **HYDRANGEACEAE** (p. 172).
    Corolla of united petals; fruit a fleshy 1-seeded drupe; leaves various in outline, often lobed........ **CAPRIFOLIACEAE** (p. 259).

Mature leaves entire, those on young shoots rarely lobed or toothed.

Leaves dotted with black glands, rounded at the apex. Flowers yellow; fruit a capsule; low shrubs........................... **HYPERICACEAE** (p. 204).

Leaves not gland-dotted, usually pointed at the apex.

Leaves, at least the upper ones, in whorls of 3, glabrous, with stipules; flowers in dense spheric heads. Shrubs or small trees...**Cephalanthus** (p. 257).

Leaves opposite, never whorled, the uppermost rarely united by their bases and thus perfoliate; stipules none; flowers not in spheric heads.

Leaves evergreen, thick and leathery. Corolla gamopetalous, pink or red; fruit a capsule; pedicels glandular-pubescent; large or small shrubs. **Kalmia** (p. 223).

Leaves deciduous, comparatively thin.

Plants climbing or trailing vines. Leaves rounded at the apex; flowers axillary, the corolla tubular or funnelform; fruit a several-seeded black or red berry................................**Lonicera** (p. 259).

Plants erect shrubs or trees.

Leaves rounded at the apex. Flowers in axillary clusters; fruit a 2-seeded white or red berry; shrubs.......**Symphoricarpos** (p. 259).

Leaves pointed at the apex.

Blades of the leaves broadest at the base and there truncate to cordate. Trees; leaves pubescent, large (mostly 12–25 cm. long); flowers large (about 4–5 cm. long).

Flowers purple; fruit a large ovoid capsule.....**Paulownia** (p. 250).

Flowers white, spotted with yellow and purple; fruit a very long terete capsule.................................**Catalpa** (p. 254).

Blades of the leaves broadest near or above the middle, obtuse or usually acute or tapering at the base.

Flowers in loose or dense panicles; stamens 2. Fruit a 1–3-seeded black berry or drupe; shrub..............**OLEACEAE** (p. 227).

Flowers in flat-topped cymes, or rarely in a dense head surrounded by 4 petal-like white bracts; stamens 4 or 5.

Corolla and calyx 4-lobed; fruit 2-seeded, a blue, white, or red berry; shrubs or trees.................**CORNACEAE** (p. 219).

Corolla and calyx 5-lobed; fruit 1-seeded, a black drupe; shrubs. **Viburnum** (p. 260).

AA. LEAVES ALTERNATE.

B. PLANTS ARMED WITH SPINES.

Leaves with 3 or more coarse longitudinal veins, these conspicuous up to the apex and meeting there; flowers in umbels. Fruit a small black berry; vines. **Smilax** (p. 124).

Leaves with a midvein, or sometimes palmately veined, the lateral veins not prominently continued to the apex and not meeting the midvein there; flowers never in umbels.

Leaves entire.

Blades of the leaves ovate, thin; flowers dioecious, green, the staminate in racemes, the pistillate in dense heads; fruit a spheric syncarp 7–10 cm. in diameter..**Toxylon** (p. 141).

Blades of the leaves lanceolate or spatulate, fleshy; flowers perfect, greenish purple, solitary or clustered in the axils; fruit a small red berry. **Lycium** (p. 247).

Leaves toothed or lobed.

Spines short, usually less than 1 cm. long; flowers small, the petals greenish yellow; fruit a many-seeded, very juicy berry; shrubs. **Grossularia** (p. 172).

Spines long, usually over 1 cm. long; flowers large, the petals white; fruit a few-seeded fleshy pome; shrubs or trees.....................**Crataegus** (p. 178).

BB. PLANTS WITHOUT SPINES.

C. LEAVES ENTIRE.

Blades of the leaves cordate at the base, about as broad as long; fruit a legume. Flowers red-purple, appearing before the leaves................**Cercis** (p. 180).

Blades of the leaves never cordate at the base, conspicuously longer than broad; fruit not a legume.

Leaves bristle-pointed, at least when young; staminate flowers in catkins; fruit an acorn..**Quercus** (p. 138).

Leaves not bristle-pointed; flowers usually not in catkins; fruit not an acorn.

Stipules present, sometimes deciduous in age but always present on young branches or about the buds.

Leaves thick and leathery, obtuse; flowers perfect, large, white, solitary. fruit large, woody, conelike........................**Magnolia** (p. 161);

Leaves thin, acute; flowers dioecious, green, in catkins; fruit a very small capsule..**Salix** (p. 132).

Stipules none.

Leaves gland-dotted beneath.

Flowers appearing before the leaves, yellow; plants with a spicelike odor; fruit usually red, 1-seeded.............................**Benzoin** (p. 162).

Flowers appearing after the leaves, white or pinkish white; plants without a marked odor; fruit black, 10-seeded..............**Gaylussacia** (p. 224).

Leaves not gland-dotted.

Leaves evergreen, thick and leathery. Flowers showy, pink or red; fruit a capsule...**ERICACEAE** (p. 222).

Leaves deciduous, comparatively thin.

Leaves large, 15–30 cm. long, obovate; fruit large (7–13 cm. long), pulpy, yellowish. Shrubs or small trees, the young parts covered with a rusty pubescence; flowers dark purplish brown or greenish, appearing before the leaves..................................**Asimina** (p. 161).

Leaves (except on young shoots or suckers) smaller, less than 15 cm. long; fruits various, but never more than 2 or 3 cm. long.

Plants trees; flowers dioecious or polygamo-dioecious.

Fruit ovoid, 1-seeded, black; flowers few or numerous, on slender peduncles....................................**Nyssa** (p. 220).

Fruit depressed-globose, several-seeded, yellowish; flowers solitary or few, on short stout peduncles or nearly sessile..**Diospyros** (p. 227).

Plants shrubs; flowers perfect.

Leaves fleshy; branches usually recurved to the ground. Flowers greenish purple; fruit a red berry..............**Lycium** (p. 247).

Leaves thin, not fleshy; branches erect or spreading.

Fruit a dry capsule. Flowers white or pinkish.
ERICACEAE (p. 222).

Fruit a fleshy or juicy berry or drupe.

Flowers without a corolla, appearing before the leaves, the calyx corolla-like, yellow; fruit 1-seeded...........**Dirca** (p. 211).

Flowers with a white or pinkish gamopetalous corolla, usually appearing with or after the leaves; fruit 2–many-seeded.

Fruit 2-seeded; flowers in flat-topped cymes; leaves with numerous conspicuous lateral veins..............**Cornus** (p. 220).

Fruit several or many-seeded; flowers clustered or in racemes; leaves with few and inconspicuous lateral veins.
Vaccinium (p. 224.)

CC. LEAVES TOOTHED OR LOBED.

Plants climbing.
  Leaves peltate, the petiole attached on the under side near the base; fruit juicy, 1-seeded. Tendrils none; leaf blades about as broad as long.
MENISPERMACEAE (p. 161).
  Leaves not peltate; fruit with more than 1 seed.
    Blades of the leaves acute or tapering at the base, not lobed; tendrils none; fruit a dehiscent capsule............................**Celastrus** (p. 199).
    Blades of the leaves cordate or truncate at the base, usually lobed; plants with tendrils; fruit a juicy berry..........................VITACEAE (p. 201).
Plants not climbing.
  Fruit an acorn. Trees; staminate flowers in catkins............**Quercus** (p. 138).
  Fruit not an acorn.
    Leaves with 2 acute lobes at the apex and with a lobe on each side near the base, not toothed, glabrous. Fruit conelike; flowers very large, yellow.
Liriodendron (p. 161).
    Leaves not 2-lobed at the apex, although often lobed in other ways........D, DD.

D. BLADES OF THE LEAVES, AT LEAST SOME OF THEM, LOBED.

Branches with sharp winglike corky ridges. Flowers and fruits sessile in globose heads; leaves glabrous, deeply lobed, the lobes acute......**Liquidambar** (p. 173).
Branches not with winglike corky ridges.
  Leaves usually 3-lobed, not at all toothed. Trees or shrubs with aromatic leaves; fruit a blue fleshy drupe; flowers greenish yellow, appearing with the leaves.
Sassafras (p. 162).
  Leaves toothed as well as lobed.
    Blades of the leaves as long as broad or longer, pinnately many-lobed; fruit a small nut coated with resinous grains. Shrubs with aromatic leaves and large stipules..**Comptonia** (p. 135).
    Blades of the leaves less than twice as long as broad, not pinnately many-lobed; fruit not a small nut with resinous grains.
      Flowers sessile in very dense spheric heads.
        Leaves longer than broad, usually with 3 broad lobes; bark not peeling off in plates...**Papyrius** (p. 141).
        Leaves as broad as long, with more than 3 very acute lobes; bark peeling off in plates...**Platanus** (p. 173).
      Flowers not in heads.
        Flowers in catkins. Fruit a capsule, a nut, or a fleshy mutiple fruit.
          Plants shrubs; fruit a nut; leaves very shallowly lobed...**Corylus** (p. 137).
          Plants trees; fruit not a nut; leaves deeply lobed.
            Fruit a capsule, the seeds hairy; leaves not rough-hairy.
Populus (p. 134).
            Fruit a juicy multiple fruit, the seeds not hairy; leaves rough-hairy.
MORACEAE (p. 141).
        Flowers never in catkins.
          Bark peeling off in shreds; fruit of 2 dry follicles. Flowers white; shrubs.
Opulaster (p. 173).
          Bark not peeling off in shreds; fruit a capsule or juicy.
            Corolla large, 5–10 cm. broad; fruit a capsule. Leaves glabrous; shrubs.
Hibiscus (p. 203).
            Corolla smaller, less than 4 cm. broad; fruit juicy.
              Plants shrubs; flowers in racemes; fruit a spheric berry.
Ribes (p. 172).
              Plants trees; flowers in corymbs; fruit a pome........**Malus** (p. 177).

DD. BLADES OF THE LEAVES NOT LOBED, THE TEETH ALL EQUAL OR NEARLY SO.

Leaf blades very asymmetric at the base.
  Teeth of the leaves obtuse; fruit a woody capsule; flowers appearing in autumn, bright yellow; shrubs.................................**Hamamelis** (p. 172).
  Teeth of the leaves acute; fruit not a woody capsule; flowers appearing in spring or summer; trees or rarely shrubs.
    Leaves glabrous or nearly so, not rough; flowers appearing after the leaves, their peduncles united with a leaflike bract. Fruit small, indehiscent. **TILIACEAE** (p. 202).
    Leaves very pubescent or rough; flowers appearing with or before the leaves, their peduncles never united with a leaflike bract.
      Flowers in catkins; fruits arranged in a hoplike strobile.......**Ostrya** (p. 137).
      Flowers not in catkins; fruits not in strobiles, either a small winged samara or a drupe...**ULMACEAE** (p. 140).
Leaf blades symmetric at the base or nearly so.
  Leaves evergreen, leathery; plants usually less than 30 cm. high. Flowers with a corolla.
    Fruit a dry capsule; teeth of the leaves not bristle-tipped; flowers in a terminal long-stalked cluster; petals distinct..................**Chimaphila** (p. 221).
    Fruit a fleshy capsule; teeth of the leaves bristle-tipped; flowers axillary, solitary; petals united....................................**Gaultheria** (p. 222).
  Leaves not evergreen, or, if so, (in *Ilex*) the plants large shrubs or trees; plants usually much more than 30 cm. high.
    Flowers all or mostly in catkins; fruit dry or, if fleshy, a cylindrical multiple fruit (mulberry), never a capsule, sometimes a nut inclosed in a spiny or rough bur; flowers appearing with or before the leaves; corolla none.
      Fruit a nut inclosed in a spiny or warty bur. Trees or shrubs; teeth of the leaves often bristle-tipped.......................**FAGACEAE** (p. 137).
      Fruit not a nut inclosed in a spiny or warty bur.
        Leaves aromatic, conspicuously gland-dotted; fruit a small spheric nut covered with white wax. Leaves oblanceolate; shrubs. **Myrica** (p. 135).
        Leaves not aromatic and gland-dotted; fruit not wax-covered.
          Fruit a small capsule; seeds long-hairy. Trees or shrubs, often with large stipules....................................**SALICACEAE** (p. 132).
          Fruit not a capsule; seeds not hairy.
            Fruit juicy or in spheric heads....................**MORACEAE** (p. 141).
            Fruit dry, never in spheric heads.............**BETULACEAE** (p. 136).
    Flowers not in catkins; fruit often a capsule, never a nut or a multiple fruit; flowers mostly appearing after the leaves; corolla present.
      Flowers sessile in dense heads on a common receptacle surrounded by an involucre of bracts; fruit an achene, bearing at the top a row of bristles. Corolla gamopetalous; shrubs...............................**Baccharis** (p. 283).
      Flowers not sessile in dense heads; fruit not an achene.
        Corolla of united petals; fruit a depressed, 5-lobed or 5-angled capsule. Flowers in simple or panicled racemes; shrubs; stipules none. **ERICACEAE** (p. 222).
        Corolla of distinct petals; fruit not a depressed 5-lobed capsule.
          Flowers solitary or clustered in the axils. Fruit a berry-like 4–8-seeded drupe; trees or shrubs; leaves sometimes persistent and with spiny teeth. **AQUIFOLIACEAE** (p. 199).

Flowers in terminal racemes, panicles, umbels, or corymbs.
  Inflorescence a small dense panicle or corymb. Fruit dry, a capsule or of several follicles; petals white or pink; low shrubs.
    Stipules present; leaves not 3-nerved; fruit of several follicles. Spiraea (p. 174).
    Stipules none; leaves 3-nerved; fruit a 3-celled capsule. **RHAMNACEAE** (p. 201).
  Inflorescence of racemes or of loose umbels.
    Leaves broadest above the middle, wedge-shaped at the base. Shrubs; fruit a 3-valved capsule................**CLETHRACEAE** (p. 220).
    Leaves broadest at or below the middle, not wedge-shaped at the base.
      Fruit a dry capsule, 2-lobed at the apex; petals about 5 mm. long; flowers in dense 1-sided racemes; shrubs **ESCALLONIACEAE** (p. 172).
      Fruit fleshy; petals usually more than 5 mm. long; flowers not in 1-sided racemes; shrubs or trees.
        Fruit 1-seeded, sometimes pubescent, the calyx borne at its base and deciduous..................**AMYGDALACEAE** (p. 179).
        Fruit with more than 1 seed, glabrous, the calyx lobes present on its summit...........................**MALACEAE** (p. 177).

II. Herbaceous Plants.

Key to the Groups.

Plants grasses or grasslike. Corolla green or none.........................**A** (p. 28).
Plants not grasslike.
  Plants floating on or submerged in water..............................**B** (p. 28).
  Plants not floating on or submerged in water, sometimes growing in the edge of water but then usually erect.
    Leaves compound, composed of few or many leaflets, or lobed to the midrib or base...**C** (p. 29).
    Leaves simple, sometimes lobed but the lobes not extending to the midrib or base.
      Stems climbing or twining, sometimes furnished with tendrils; plants green. **D** (p. 31).
      Stems not climbing or twining, or, if so, without green coloring, never furnished with tendrils.
        Plants without green coloring. Fruit a capsule; leaves reduced to scales. **E** (p. 31).
        Plants with green coloring.
          Plants without a leafy stem, or the stems underground, the flowering stems naked or bearing a single leaf or a whorl of leaves subtending the inflorescence...**F** (p. 32).
          Plants with leafy stems, the leaves sometimes reduced to scales; stems sometimes bearing only a single leaf, but this borne far below the inflorescence.
            Leaves evidently parallel-veined; parts of the flower in 3's or 6's; plants sometimes with bulbs...................................**G** (p. 33).
            Leaves net-veined; parts of the flower usually in 4's or 5's, but rarely in 3's; plants never with bulbs.
              Leaves all, or at least some of them, opposite.
                Leaves entire.....................................**H** (p. 34).
                Leaves toothed or lobed...............................**I** (p. 36).

Leaves alternate.

Flowers sessile in dense heads on a common receptacle surrounded by an involucre of bracts. Corolla always present, of united petals, usually colored and often showy; fruit an achene or rarely of 2 dry adherent carpels........................**J** (p. 37).

Flowers not sessile in dense heads on a common receptacle subtended by an involucre of bracts.

Leaves entire (sometimes cordate at the base)..........**K** (p. 38).

Leaves toothed or lobed..............................**L** (p. 39).

A.

Grasses or grasslike plants.

Flowers not inclosed by husklike scales, composed of 3 sepals and 3 petals; stems terete, usually simple, hollow or solid; fruit a dehiscent capsule containing few or many seeds..**JUNCACEAE** (p. 117).

Flowers inclosed by husklike scales, without a proper calyx or corolla; stems sometimes branched; fruit indehiscent, 1-seeded.

Leaves in 2 ranks on the stems; stems round or somewhat flattened, usually hollow; leaf sheaths usually split; flowers with 2 bracts, one below and one above. **POACEAE** (p. 66).

Leaves in 3 ranks on the stems; stems round or usually 3-angled; leaf sheaths not split; flowers with only one bract, this below.......**CYPERACEAE** (p. 92).

B.

Plants floating on or submerged in water.

Plants very small, less than 1 cm. long, floating free, consisting of a frond bearing 1 or 2 minute flowers on the upper surface, often with 1 or more roots beneath. **LEMNACEAE** (p. 114).

Plants larger, several centimeters long or very large, with conspicuous leaves and usually with branched stems.

Leaves entire or finely toothed, never lobed, sometimes deeply cordate at the base.

Blades of the leaves deeply cordate at the base, or peltate (the petiole attached to the middle of the blade).

Leaves peltate, rounded, rarely more than 4 cm. wide; corolla of united petals, not more than 3 mm. long; flowers clustered ....**Hydrocotyle** (p. 219).

Leaves not peltate, or, if so, oval and usually much more than 4 cm. in diameter; corolla of distinct petals, much more than 3 mm. long; flowers not clustered. **NYMPHAEACEAE** (p. 155).

Blades of the leaves not cordate at the base, never peltate.

Leaf blades spatulate in the floating leaves. Flowers minute, solitary or 2 or 3 together in the axils of the leaves, sessile; fruit nutlike, 4-lobed. **CALLITRICHACEAE** (p. 197).

Leaf blades never spatulate.

Plants acaulescent. Leaves long, linear; fertile flowers borne on long, very slender scapes; fruit indehiscent, many-seeded.... **Vallisneria** (p. 66).

Plants with stems.

Leaves alternate.

Stipules present; flowers in spikes, green; leaves linear or broad; fruit 1-seeded........................ **POTAMOGETONACEAE** (p. 62).

Stipules wanting; flowers solitary on the end of a long slender peduncle, yellow; leaves linear; fruit many-seeded ....**Heteranthera** (p. 116).

Leaves opposite or whorled. Flowers minute, green.

Flowers with a 3 or 6-parted perianth; leaves finely toothed; fruit several-seeded.............................. **Anacharis** (p. 66).

Flowers without a perianth; leaves entire or finely toothed; fruit 1-seeded. **NAIADACEAE** (p. 64).

Leaves, at least most of them, deeply lobed or divided.
  Blades of the leaves furnished with small bladders, finely dissected; flowers yellow ....**PINGUICULACEAE** (p. 255).
  Blades of the leaves without bladders; flowers green or white.
    Flowers conspicuous, with white petals, solitary on long slender pedicels. **Cabomba** (p. 155).
    Flowers minute, green, sessile or nearly so.
      Flowers in spikes; blades of the upper leaves merely toothed or lobed; fruit nutlike, 4-lobed ....**HALORAGIDACEAE** (p. 214).
      Flowers not in spikes; blades of all the leaves dissected; fruit not 4-lobed.
        Leaves less than 1 cm. long; soft; fruit 1-seeded. **CERATOPHYLLACEAE** (p. 155).
        Leaves usually much more than 1 cm. long, rigid; fruit many-seeded. **PODOSTEMACEAE** (p. 171).

C.

Leaves compound, of 2 or more leaflets.

Plants without leafy stems, the leaves all at the base, the flowering stems naked.
  Leaflets 2; fruit a capsule, opening by a lid. Juice colored; flowers white. **Jeffersonia** (p. 160).
  Leaflets 3 or more; fruit not opening by a lid.
    Flowers apparently solitary, each "flower" really consisting of a spike of small flowers surrounded by a corolla-like spathe; fruit a berry. Leaflets acute. **Arisaema** (p. 113).
    Flowers in racemes or umbels; fruit a capsule.
      Leaflets 3, entire, notched at the apex; flowers in umbels, regular. **Ionoxalis** (p. 191).
      Leaflets more than 3, much divided into narrow lobes; flowers in racemes, very irregular...**Bikukulla** (p. 163).
Plants with leafy stems.
  Corolla papilionaceous (shaped like that of a bean or pea); fruit a legume. Leaves alternate, with stipules..................................**FABACEAE** (p. 181).
  Corolla not papilionaceous; fruit not a legume (except in Caesalpiniaceae).
    Flowers borne in a dense head on a common receptacle surrounded by an involucre of bracts (the head often taken to be a single flower). Fruit an achene; stipules none; corolla gamopetalous.
      Plants with milky juice; leaflets 3; corollas all irregular..**Prenanthes** (p. 265).
      Plants with colorless juice; leaflets usually more than 3; corollas regular, or the outer ones irregular.
        Pistillate and staminate flowers in separate heads, the involucres of the fertile heads hard and woody, spiny.........................**Ambrosia** (p. 268).
        Pistillate and staminate flowers in the same head, or the flowers all perfect, the involucres never hard or spiny.............**ASTERACEAE** (p. 268).
    Flowers not borne in a dense head on a common receptacle surrounded by an involucre of bracts.
      Stems bearing only a single leaf or a pair or whorl of leaves.
        Sepals and petals each 4; fruit a long narrow dry pod. Leaflets 3 or 5. **Dentaria** (p. 169).
        Sepals 5 or more; petals 5 or more or united or wanting; fruit juicy or of few or many achenes in a head.
          Fruit a head of achenes; corolla none, but the sepals petal-like. **RANUNCULACEAE** (p. 156).

Fruit a juicy drupe or the seeds with a fleshy coat; corolla present.

Leaflets 2 or 3-lobed, numerous; flowers in racemes or panicles; petals distinct.................................... **Caulophyllum** (p. 161).

Leaflets with numerous teeth, few or many; flowers in umbels; petals united.................................... **ARALIACEAE** (p. 215).

Stems bearing normally 2 or more alternate leaves or 2 or more pairs of leaves.

Leaves all or mostly opposite.

Leaves of 5–7 digitate leaflets. Flowers very small, green; fruit an achene. **Cannabis** (p. 142).

Leaves pinnate or pinnately lobed.

Flowers blue or white. Fruit a capsule. **HYDROPHYLLACEAE** (p. 236).

Flowers yellow or pink.

Plants erect; flowers yellow; fruit a many-seeded capsule. **Aureolaria** (p. 253).

Plants with long slender trailing branches; flowers pink; fruit 1-seeded, indehiscent.................................... **Valeriana** (p. 261).

Leaves alternate.

Stems climbing. Flowers blue or purple; leaves pinnate; fruit a red berry. **Solanum** (p. 248).

Stems not climbing.

Corolla of united petals, blue or white. Leaves pinnate or pinnately lobed; fruit a capsule.

Leaflets entire; style 1........................ **Polemonium** (p. 235).

Leaflets toothed or lobed; styles 2... **HYDROPHYLLACEAE** (p. 236).

Corolla of distinct or nearly distinct petals, or wanting.

Corolla very irregular, yellow or pink, some of the petals spurred. Glabrous annuals; fruit dry; leaflets many. **FUMARIACEAE** (p. 163).

Corolla regular.

Leaflets (3) obcordate, entire, notched at the apex. Flowers yellow, in cymes; fruit a capsule.................. **Xanthoxalis** (p. 191).

Leaflets not obcordate and entire.

Leaves with 5–7 palmate equal leaflets. Plants viscid-pubescent; petals 4, white or pink; fruit a long narrow pod. **CAPPARIDACEAE** (p. 170).

Leaves not with 5–7 palmate equal leaflets............... A, AA.

A. LEAVES WITH STIPULES.

Flowers pink, the 5 petals small. Plants annual, pubescent; leaflets numerous; fruit dry.. **Erodium** (p. 190).

Flowers yellow or white.

Leaflets entire, 10 or more; flowers yellow; fruit a legume. **CAESALPINIACEAE** (p. 180).

Leaflets toothed or lobed, often only 3; flowers yellow or white; fruit not a legume. **ROSACEAE** (p. 173).

AA. LEAVES WITHOUT STIPULES.

Petals and sepals each 3. Flowers minute, axillary; annual plants of wet soil, with pinnate leaves.................................... **LIMNANTHACEAE** (p. 198).

Petals and sepals 4 or more or wanting, the sepals often united, sometimes only 2.

Flowers in regular umbels, small, yellow or white; fruit of 2 dry adherent carpels. Calyx entire or 5-toothed.............................. **APIACEAE** (p. 215).

Flowers not in umbels; fruit not of 2 dry adherent carpels.

Sepals 2, falling as the flower opens; plants with white or yellow juice, pubescent. Flowers yellow or red; fruit a capsule......... **PAPAVERACEAE** (p. 162).

Sepals more than 2, usually persistent; plants with colorless juice.
  Petals and sepals each 4, regular; petals yellow, white, or pink; fruit a 2-celled pod with several or numerous seeds. Leaves once pinnate. **BRASSICACEAE** (p. 163).
  Petals 5 or none; sepals usually 5, sometimes 4; petals yellow, red, or white; sepals and petals sometimes spurred; fruit a 1-seeded achene, or each fruit composed of several pods.................**RANUNCULACEAE** (p. 156).

D.

Plants climbing, often with tendrils; leaves simple.

Plants with tendrils.
  Leaves 5–9-ribbed, usually entire; flowers in umbels. Fruit a bluish black berry with 2–6 seeds; stipules none.....................**SMILACACEAE** (p. 124).
  Leaves not ribbed, lobed or toothed; flowers not in umbels.
    Stipules present; petals distinct; flowers 2.5–5 cm. broad, solitary, greenish yellow. **PASSIFLORACEAE** (p. 211).
    Stipules none; petals united; flowers about 1 cm. broad, mostly in racemes or corymbs.................................**CUCURBITACEAE** (p. 262).
Plants without tendrils.
  Leaves peltate, the petiole attached on the under side of the blade near the margin, the blades angled or lobed; fruit juicy, 1-seeded. Flowers very small, in axillary panicles.............................**MENISPERMACEAE** (p. 161).
  Leaves not peltate; fruit not juicy.
    Leaves, at least the lowest ones, opposite or whorled.
      Leaves entire; fruit not an achene, with 3 or many seeds.
        Plants with milky juice; petals 5, united, whitish or dark purple; fruit of large pods, containing many seeds, these bearing a tuft of silky hairs. **ASCLEPIADACEAE** (p. 231).
        Plants with colorless juice; petals 3, distinct, greenish yellow; fruit a 3-winged capsule, the seeds not hairy..............**DIOSCOREACEAE** (p. 125).
      Leaves toothed or lobed; fruit an achene.
        Blades of the leaves, at least most of them, deeply lobed, rough; flowers dioecious, green, in catkins or panicles..................**Humulus** (p. 142).
        Blades of the leaves merely toothed, glabrous; flowers perfect, in small heads, each head surrounded by 4 bracts....................**Mikania** (p. 275).
    Leaves alternate.
      Leaves with sheathing stipules; corolla none; fruit an achene. **POLYGONACEAE** (p. 144).
      Leaves without stipules; corolla gamopetalous, showy; fruit a capsule. **CONVOLVULACEAE** (p. 233).

E.

Plants without green coloring; leaves reduced to scales; fruit a capsule.

Stems twining, parasitic upon the stems of other plants, bright yellow or orange, slender Corolla regular, gamopetalous........................**CUSCUTACEAE** (p. 234).
Stems erect, the plants growing in the ground, not bright yellow or orange, stout.
  Flowers regular or nearly so, the petals distinct. Plants glabrous or pubescent. **MONOTROPACEAE** (p. 221).
  Flowers very irregular.
    Plants glabrous; petals and sepals each 3, distinct......**ORCHIDACEAE** (p. 127).
    Plants pubescent; corolla of united petals........**OROBANCHACEAE** (p. 254).

F.

Plants with simple leaves, acaulescent or the stems underground, the flowering stems naked or bearing a single leaf or whorl of leaves subtending the inflorescence.

Leaves pitcher-like or covered with long gland-bearing hairs, purplish. Flowers regular, with 5 petals; fruit a capsule.

Leaves pitcher-like; flowers solitary on long scapes..**SARRACENIACEAE** (p. 170).

Leaves flat, covered with gland-bearing hairs; flowers in racemes. **DROSERACEAE** (p. 170).

Leaves neither pitcher-like nor covered with gland-bearing hairs.

Flowers sessile in dense heads or spikes.

Flowers in heads.

Leaves toothed or lobed; flowers yellow..........**CICHORIACEAE** (p. 263).

Leaves entire, narrow; flowers yellow or white.

Leaves 2-ranked; flowers yellow....................**XYRIDACEAE** (p. 115).

Leaves not 2-ranked; flowers whitish.........**ERIOCAULACEAE** (p. 115).

Flowers in spikes.

Spikes twisted; leaves often wanting; flowers white.........**Ibidium** (p. 130).

Spikes not twisted; leaves always present; flowers not white.

Leaves deeply cordate at the base, broad, not ribbed, glabrous; flowers blue, showy; fruit 1-seeded..............................**Pontederia** (p. 116).

Leaves slightly or not at all cordate, broad and ribbed or linear, often pubescent; flowers small, greenish; fruit with 2 or more seeds. **PLANTAGINACEAE** (p. 256).

Flowers not sessile in dense heads or spikes, sometimes in dense racemes, but then pediceled.

Scapes with more than 1 flower.

Leaves terete, fleshy. Flowers pink; fruit a capsule........**Talinum** (p. 150).

Leaves flat, not fleshy.

Corolla very irregular. Leaves parallel-veined..**ORCHIDACEAE** (p. 127).

Corolla regular.

Flowers or branches of the inflorescence forming several or many whorls; fruit a head of numerous achenes. Petals 3, white; leaves usually cordate or hastate............................**ALISMACEAE** (p. 64).

Flowers not whorled; fruit a capsule.

Leaves evidently parallel-veined, linear or very narrow; petals 3.

Leaves 2-ranked. Flowers usually blue.......**IRIDACEAE** (p. 126).

Leaves not 2-ranked.

Flowers 4 or fewer, yellow or white; leaves sometimes pubescent. **AMARYLLIDACEAE** (p. 125).

Flowers numerous, or, if few, orange; leaves glabrous. **LILIACEAE** (p. 120).

Leaves net-veined, oblong to rounded; petals or corolla lobes 5.

Blades of the leaves very pubescent, conspicuously toothed; flowers in cymes, white, the petals distinct; capsule cleft nearly to the base......................................**Saxifraga** (p. 172).

Blades of the leaves glabrous, entire or very shallowly toothed; flowers not in cymes; capsule not cleft.

Flowers in umbels; corolla gamopetalous, reflexed, rose-colored. leaves not evergreen ....**Dodecatheon** (p. 227).

Flowers in racemes; petals distinct, white, greenish, or pink, spreading; leaves evergreen...................**PYROLACEAE** (p. 220).

Scapes 1-flowered.

Leaves toothed or lobed. Petals distinct or none.

Fruit a head of achenes; leaves 3-lobed, the lobes entire or merely crenate; flowers yellow, bluish, or white; petals sometimes wanting, the sepals then petal-like..........................**RANUNCULACEAE** (p. 156).

Fruit a capsule; leaves toothed or with toothed lobes; flowers blue or white; petals present.
  Juice orange; leaves thick and succulent; petals regular, white; capsule acute..**Sanguinaria** (p. 162).
  Juice colorless; leaves thin; petals irregular, blue or white; capsule obtuse..**Viola** (p. 206).
Leaves entire, sometimes cordate at the base.
  Blades of the leaves broadly kidney-shaped, as broad as long or broader. Fruit a capsule.
    Leaves pubescent; flowers brownish purple; plants of woodlands.
Asarum (p. 143).
    Leaves glabrous; flowers blue or white; plants of muddy shores.
Heteranthera (p. 116).
  Blades of the leaves not kidney-shaped, longer than broad, usually narrow but sometimes oval or triangular.
    Flowers crowded in a spike, this surrounded by a corolla-like spathe, the whole inflorescence appearing like a single flower; fruit a berry, fleshy, with 1 or few seeds......................**ARACEAE** (p. 113).
    Flowers not crowded in a spike surrounded by a spathe; fruit a capsule, or fleshy and with numerous seeds.
      Leaves deeply cordate, more than 15 cm. wide; fruit fleshy. Flowers yellow...**Nymphaea** (p. 155).
      Leaves not cordate, less than 10 cm. wide; fruit a dry capsule.
        Flowers very irregular; leaves sometimes ovate or oval.
ORCHIDACEAE (p. 127).
        Flowers regular; leaves narrow.
          Leaves 2-ranked; flowers blue.................**IRIDACEAE** (p. 126).
          Leaves not 2-ranked; flowers white or yellow.
Erythronium (p. 122).

G.

Green plants with leafy stems, the leaves rarely reduced to scales, the stems sometimes bearing only a single leaf or pair of leaves, but this borne far below the inflorescence; leaves evidently parallel-veined; parts of the flower in 3's or 6's.

Flowers sessile in very dense heads or spikes, without a perianth, or the perianth represented by 3 or 6 minute green scales. Plants growing in or at the edge of water; leaves linear.
  Flowers in long, brown or green spikes; plants about a meter high.
TYPHACEAE (p. 62).
  Flowers in green spheric heads; plants rarely half a meter high.
SPARGANIACEAE (p. 62).
Flowers not sessile in dense spikes or heads; perianth present, usually conspicuously colored.
  Petals irregular; flowers sometimes inclosed in a spathe. Fruit a capsule.
    Flowers blue, inclosed in a spathe; stems much jointed; leaves ovate or lanceolate.
Commelina (p. 116).
    Flowers never blue, not inclosed in a spathe; stems not jointed
ORCHIDACEAE (p. 127).
  Petals regular; flowers not inclosed in a spathe.
    Leaves 2-ranked; fruit a capsule.
      Flowers in racemes, whitish, very small; inflorescence glandular-pubescent.
Tofieldia (p. 119).
      Flowers not in racemes, usually blue or orange and large; plants without glandular pubescence..................................**IRIDACEAE** (p. 126).

Leaves not 2-ranked; fruit a capsule or a berry.
  Flowers blue or purple. Leaves linear; fruit a capsule..**Tradescantia** (p. 116).
  Flowers not blue or purple.
    Fruit a berry; plants never with bulbs; leaves sometimes a single whorl at the top of the stem......................**CONVALLARIACEAE** (p. 123).
    Fruit a capsule; plants often with bulbs; leaves never a single whorl.
      Style 1 and cleft to below the middle, or styles 3; stems sometimes branched; flowers mostly small and greenish.
        MELANTHIACEAE (p. 119).
      Style 1, cleft only at the summit; stems simple up to the inflorescence; flowers mostly large and brightly colored........**LILIACEAE** (p. 120).

H.

Plants with leafy stems; leaves all or part of them opposite, the blades simple, entire, net-veined.

Flowers sessile in dense heads on a common receptacle surrounded by an involucre of bracts. Fruit an achene....................................**Group J** (p. 37).
Flowers not sessile in dense heads on a common receptacle surrounded by an involucre of bracts..A, AA.

A. COROLLA GAMOPETALOUS (OF UNITED PETALS), ALWAYS PRESENT, CONSPICUOUS, COLORED.

Corolla conspicuously irregular.
  Fruit of 4 small nutlets in the bottom of the calyx; stems usually conspicuously 4-angled; leaves usually gland-dotted................**MENTHACEAE** (p. 239).
  Fruit a dehiscent capsule; stems usually not 4-angled; leaves not gland-dotted.
    Capsules abruptly contracted at the base into a short stalk; flowers purplish, in axillary clusters or spikes; seeds few, borne on hooks in the capsule.
      ACANTHACEAE (p. 255).
    Capsules not contracted at the base; flowers blue, white, pink, or purplish, racemose or axillary and then usually solitary; seeds often numerous, not borne on hooks.........................**SCROPHULARIACEAE** (p. 248).
Corolla regular or nearly so.
  Leaves in whorls.
    Leaves gland-dotted; corolla bright yellow; fruit a glabrous capsule with more than 2 seeds...**Lysimachia** (p. 225).
    Leaves not gland-dotted; corolla white or greenish, never bright yellow; fruit of 2 1-seeded indehiscent united nutlets, often hairy.........**Galium** (p. 257).
  Leaves not in whorls.
    Leaves with stipules, or the petioles connected by a stipular membrane.
      Calyx united with the ovary and capsule; flowers never red.
        RUBIACEAE (p. 257).
      Calyx free from the capsule; flowers red or white....**LOGANIACEAE** (p. 228).
    Leaves without stipules.
      Ovaries 2, each or only one developing into a large pod, this usually 5 cm. long or more. Seeds usually with a tuft of down; juice usually milky.
        Flowers solitary or in cymes; corolla bell-shaped and shallowly lobed or funnelform, white, pink, or blue; pods slender, rarely over 6 mm. in in diameter, glabrous, smooth. Leaves sometimes evergreen.
          APOCYNACEAE (p. 229).
        Flowers in umbels; corolla neither bell-shaped and shallowly lobed nor funnelform, never blue; pods stout, usually more than 6 mm. in diameter, often pubescent or tuberculate...........**ASCLEPIADACEAE** (p. 231).

Ovary 1; fruit a single capsule or drupe.
Corolla about as long as the calyx; fruit indehiscent, 3-seeded, purplish or yellowish; leaves often clasping the stem...........**Triosteum** (p. 260).
Corolla much longer than the calyx; fruit dehiscent, not colored, usually with more than 3 seeds; leaves not clasping.
Capsule abruptly contracted at the base; seeds on hooks inside the capsule; stamens fewer than the corolla lobes. Flowers bluish or purplish. **Ruellia** (p. 256).
Capsule not contracted at the base; seeds not on hooks; stamens as many as the corolla lobes.
Stamens opposite the corolla lobes; flowers bright yellow or else solitary in the axils. Corolla tube none or scarcely any. **PRIMULACEAE** (p. 225).
Stamens alternate with the corolla lobes; flowers never bright yellow nor solitary in the axils.
Capsule 1-celled; seeds numerous; plants glabrous or nearly so; leaves sometimes reduced to scales; corolla tube sometimes nearly obsolete, usually thick and stout.........**GENTIANACEAE** (p. 228).
Capsule 3-celled; seeds 3; plants usually pubescent; leaves never reduced to scales; corolla tube long and slender...**Phlox** (p. 235).

AA. COROLLA OF DISTINCT PETALS OR WANTING (THE CALYX SOMETIMES COROLLA-LIKE).

Leaves dotted with black glands, usually sessile. Flowers yellow or pink; leaves mostly sessile....................................**HYPERICACEAE** (p. 204).
Leaves not dotted with black glands.
Leaves with stipules.
Leaves obovate; petals 2 or 3, evident; plants of very wet soil. **ELATINACEAE** (p. 205).
Leaves linear; petals 5, or very minute or wanting; plants of dry soil.
Petals about 3 mm. long; pedicels glandular-pubescent.........**Tissa** (p. 151).
Petals minute or none; pedicels without glandular pubescence. **CORRIGIOLACEAE** (p. 150).
Leaves without stipules.
Plants with milky juice; capsule deeply 3-lobed. Upper leaves usually whorled; flowers small, white or greenish................**EUPHORBIACEAE** (p. 194).
Plants with colorless juice; fruit not 3-lobed.
Stems 1-flowered, the flowers solitary on long slender peduncles, nodding; sepals 4, petal-like, thick and leathery, large (2.5 cm. long). Leaves sessile or nearly so, silky beneath..............................**Viorna** (p. 160).
Stems usually with more than 1 flower, the flowers not solitary on long slender peduncles, not nodding; sepals smaller, not thick and leathery.
Flowers in simple spikes or racemes, very irregular, the sepals 5, 3 of them small, 2 of them large and colored like the 3 petals. Leaves often whorled; fruit very flat...........................**POLYGALACEAE** (p. 193).
Flowers not in simple spikes or racemes, not irregular.
Leaves mostly whorled in 3's, very fleshy, obovate; branches of the inflorescence 1-sided. Petals white.......................**Sedum** (p. 171).
Leaves not whorled, or, if so, the blades not fleshy; branches of the inflorescence not very 1-sided.
Calyx and corolla wanting; fruit 4-lobed. Flowers solitary in the axils; leaves obovate; small prostrate plants of wet soil. **CALLITRICHACEAE** (p. 197).
Calyx and usually a corolla present; fruit not 4-lobed............ B, BB.

B. SEPALS UNITED, AT LEAST BELOW, OFTEN NEARLY TO THE APEX.

Flowers surrounded by a calyx-like involucre, the calyx pink, corolla-like. **ALLIONIACEAE** (p. 149).
Flowers not surrounded by an involucre; calyx green.
  Flowers sessile in the forks of the branches, small, green. Leaves linear; plants annual.. **Scleranthus** (p. 151).
  Flowers not sessile in the forks of the branches, usually large and colored.
    Petals inserted on the throat of the calyx; flowers axillary or whorled. **LYTHRACEAE** (p. 211).
    Petals not inserted on the calyx; flowers mostly in cymes or panicles. **SILENACEAE** (p. 153).

BB. SEPALS DISTINCT.

Leaves whorled; flowers axillary, pediceled. Plants annual.. **AIZOACEAE** (p. 150).
Leaves not whorled; flowers usually not axillary.
  Flowers (calyx and bracts) greenish white, crowded in short slender spikes arranged in loose panicles; petals none. Leaves broadly ovate, petioled.. **Iresine** (p. 149).
  Flowers not as above; petals usually present, but sometimes falling early.
    Sepals 2; stem leaves a single pair. Petals pink............ **Claytonia** (p. 150).
    Sepals 5; stem leaves numerous.
      Petals white or wanting; sepals equal or nearly so; stems usually soft and succulent.. **ALSINACEAE** (p. 151).
      Petals yellow, greenish, or purplish; sepals unequal, the 2 outer much narrower than the 3 inner ones; stems rigid and almost woody. **CISTACEAE** (p. 205).

I.

Plants with leafy stems; leaves opposite, the blades toothed or lobed, simple, net-veined.

Flowers sessile in dense heads on a common receptacle surrounded by an involucre of bracts.
  Chaff of the receptacle (among the flowers) with long rigid spinelike tips; receptacle several times as long as broad; stamens distinct. Leaves with prickly teeth. **DIPSACACEAE** (p. 262).
  Chaff of the receptacle not with long rigid spinelike tips, sometimes wanting; receptacle usually less than twice as long as broad; stamens united by their anthers in a ring.. **Group J** (p. 37).
Flowers not sessile in dense heads on a common receptacle surrounded by an involucre of bracts.
  Corolla gamopetalous (of united petals), usually colored and conspicuous.
    Fruit composed of 2 or 4 nutlets in the bottom of the calyx, these sometimes united at first but separating in age. Stems usually 4-sided.
      Ovary not lobed, the style terminal upon it; plants not with a mintlike odor, the leaves not gland-dotted; corolla usually nearly regular. Flowers sessile in spikes or heads.............................. **VERBENACEAE** (p. 239).
      Ovary deeply 4-lobed, the style rising from between the lobes; plants usually with a mintlike odor, the leaves usually gland-dotted; corolla usually very irregular.............................. **MENTHACEAE** (p. 239).
    Fruit not composed of 2 or 4 nutlets, the nutlets either only 1 or the fruit a capsule.
      Flowers reflexed and appressed to the stem in fruit; fruit a single nutlet in the bottom of the calyx; calyx teeth hooked at the tip. Corolla purplish; leaves on slender petioles........................ **PHRYMACEAE** (p. 256).
      Flowers not reflexed and appressed in fruit; fruit not a nutlet in the bottom of the calyx; calyx teeth not hooked at the tip.

Calyx wholly united with the ovary and fruit; fruit indehiscent; stamens 3; corolla nearly regular, white; plants annual, glabrous. **Valerianella** (p. 261).

Calyx free from the ovary and fruit; fruit a dehiscent capsule; stamens 2, 4, or 5; corolla usually irregular, variously colored; plants annual or perennial, usually pubescent......**SCROPHULARIACEAE** (p. 248).

Corolla of distinct petals, or sometimes wanting, the flowers sometimes small and green.

Leaves deeply lobed.

Plants glabrous; leaves only 2, borne at the top of the stem; flower 1, borne between the leaves, with large white petals; fruit juicy. **Podophyllum** (p. 160).

Plants pubescent; leaves more than 2; flowers usually more than 1; fruit dry.

Petals present, the sepals green; fruit composed of 5 carpels; plants annual or perennial......................................**Geranium** (p. 190);

Petals none, but the sepals colored and petal-like; fruit of numerous achenes; plants perennial..........................**RANUNCULACEAE** (p. 156).

Leaves only toothed, or rarely very shallowly lobed.

Plants with milky juice; fruit deeply 3-lobed. Corolla none, but the flowers surrounded by an often corolla-like involucre. **EUPHORBIACEAE** (p. 194);

Plants with colorless juice; fruit not 3-lobed.

Flowers green, without petals; fruit 1-seeded.

Plants covered with whitish scales, never with slender hairs nor glabrous. flowers solitary or in spikes; stipules none..........**Atriplex** (p. 148).

Plants glabrous or with slender, sometimes stinging hairs; flowers mostly clustered; stipules present..................**URTICACEAE** (p. 142).

Flowers with white or colored petals; fruit with more than one seed.

Petals large (1 cm. long or longer), pink or purplish; leaves 3–4-ribbed; plants bristly-hairy.................**MELASTOMATACEAE** (p. 212).

Petals small (much less than 1 cm. long); leaves not ribbed; plants not bristly hairy.

Leaves about as broad as long; calyx free from the ovary and fruit; petals white or yellow; plants flowering in spring; seeds never; with a tuft of hairs and fruit never bristly. **SAXIFRAGACEAE** (p. 171).

Leaves much longer than broad; calyx united with the ovary and fruit; petals pink or whitish; plants flowering in summer or autumn; seeds with a tuft of hairs or else the fruit covered with hooked bristles................................**ONAGRACEAE** (p. 212).

J.

Flowers sessile in dense heads on a common receptacle surrounded by an involucre of bracts; corolla gamopetalous, regular or irregular; calyx represented by scales or bristles or sometimes none; stamens united by their anthers in a ring; fruit an achene. (These plants are commonly called Composites. Typical of them are the sunflower, goldenrod, aster, dandelion, and ragweed. The heads of flowers are often mistaken by amateur botanists for a single flower.)

Plants with milky juice; corolla of all the flowers irregular, produced into a strap-shaped ray; leaves alternate or sometimes all basal...**CICHORIACEAE** (p. 263).

Plants not with milky juice; corollas all regular, or the outer ones produced into a strap-shaped ray; leaves alternate or opposite.

Flowers staminate and pistillate, the 2 kinds in separate unlike heads; involucre of the pistillate heads woody, spiny; ray flowers none; flowers greenish or yellowish. (Ragweeds and cockleburs).........**AMBROSIACEAE** (p. 267).

Flowers all perfect, or both kinds in the same head, or rarely in separate heads, but the heads then all similar in general appearance; involucre not woody and spiny; ray flowers usually present...............**ASTERACEAE** (p. 268).

K.

Plants with leafy stems; leaves alternate, the blades simple, entire, net-veined.

Stem leaves reduced to minute scales. Corolla very irregular, spurred; small slender plants of very wet soil........................**PINGUICULACEAE** (p. 255).

Stem leaves not reduced to scales.

Leaves with stipules, these sometimes united into a sheath.

Stipules united and sheathing; fruit an achene. Petals none, the flowers small, greenish, whitish, or pink, mostly axillary or in spikes. **POLYGONACEAE** (p. 144).

Stipules not sheathing; fruit a capsule or a pod, with more than one seed.

Petals none; plants glabrous; fruit a small 3-celled capsule. **Phyllanthus** (p. 195).

Petals present, yellow; plants pubescent; fruit an inflated 1-celled pod. **Crotalaria** (p. 183).

Leaves without stipules.

Corolla gamopetalous, usually colored and conspicuous.

Flowers 4–5 cm. long, white; calyx inclosed by 2 broad bracts. Leaves often cordate at the base; fruit a capsule................**Convolvulus** (p. 234).

Flowers less than 3 cm. long; calyx not inclosed by 2 broad bracts.

Juice milky; flowers in umbels; fruit of 1 or 2 large pods, the seeds with tufts of hairs.....................................**Acerates** (p. 231).

Juice colorless; flowers not in umbels; fruit a small capsule or berry or of 4 nutlets, the seeds not with tufts of hairs.

Corolla spurred, yellow. Nearly glabrous, glaucous perennial. **Linaria** (p. 250).

Corolla not spurred.

Fruit of 4 nutlets; plants rough-hairy, often bristly, or glabrous and with blue flowers (the flowers sometimes white, yellow, or reddish). **BORAGINACEAE** (p. 237).

Fruit a capsule or a berry; plants never rough-hairy, not with blue flowers.

Corolla white; fruit a capsule; calyx not enlarged in fruit. **PRIMULACEAE** (p. 225).

Corolla yellow; fruit a berry, inclosed by the enlarged bladdery calyx. **Physalis** (p. 247).

Corolla of distinct petals or wanting, the calyx sometimes colored and corolla-like.

Flowers with neither calyx nor corolla, crowded in long cylindrical dense spikes; leaves cordate, petioled. Plants of marshy soil. **SAURURACEAE** (p. 132).

Flowers with a calyx and often with a corolla; leaves not cordate, or, if so, the flowers not in spikes.

Flowers green, small, the sepals never colored; petals none. Fruit dry or nearly so.

Plants perennial, pubescent; fruit a capsule, with more than 1 seed. Leaves small and narrow..............................**CISTACEAE** (p. 205).

Plants annual, glabrous or pubescent; fruit an achene or a 1-seeded capsule.

Flowers all in loose cymose axillary clusters; style 1, not branched. Plants pubescent............................**Parietaria** (p. 142).

Flowers all or most of them in spikes or terminal cymes or panicles, or else all in dense sessile axillary clusters; styles 2 or 3, or 1 and branched.

Flowers subtended by scarious bracts, the sepals awn-pointed; fruit dehiscent or indehiscent; leaves never linear nor with spiny tips; plants never white-mealy..........**AMARANTHACEAE** (p. 148).

Flowers not subtended by bracts, the sepals not awn-pointed; fruit indehiscent; leaves linear and with spiny tips, or the plants white-mealy, at least about the inflorescence. **CHENOPODIACEAE** (p. 147).

Flowers colored; petals present and colored, or the petals sometimes wanting and the calyx colored and corolla-like.

Leaves deeply cordate and densely velvety-pubescent; fruit composed of 12–15 carpels arranged in a ring. Petals yellow.....**Abutilon** (p. 203).

Leaves not cordate, or, if so, not velvety-pubescent; fruit not of numerous carpels.

Blades of the leaves very fleshy and succulent, obovate or terete; fruit a many-seeded capsule opening by a lid. Petals present, bright-colored..**Portulaca** (p. 150).

Blades ot the leaves thin, not fleshy; fruit not opening by a lid.

Flowers borne on the lower part of the stem near the ground; calyx S-shaped. Petals none; leaves petioled, cordate or halberd-shaped....................................**Aristolochia** (p. 143).

Flowers borne on the upper part of the stem; calyx never curved.

Calyx united with the ovary and fruit, apparently borne on top of them.

Petals present, yellow or purplish; fruit dehiscent, with several or many seeds; plants often pubescent, never glaucous. **ONAGRACEAE** (p. 212).

Petals none, the calyx white and corolla-like; fruit indehiscent, 1-seeded; plants glabrous, glaucous. **SANTALACEAE** (p. 143).

Calyx free from the ovary and calyx, the ovary inside the calyx.

Petals none, the 5 sepals petal-like; fruit a juicy dark purple berry. Flowers in racemes...........**PHYTOLACCACEAE** (p. 150).

Petals present; fruit dry.

Sepals and petals each 5; flowers corymbed or panicled; fruit 5-celled, as broad as long; petals yellow or blue. **LINACEAE** (p. 192).

Sepals and petals each 4; flowers in racemes; fruit 1 or 2-celled, longer than broad; petals usually white, sometimes yellow. **BRASSICACEAE** (p. 163).

L.

Plants with leafy stems; leaves alternate, the blades toothed or lobed, net-veined.

Leaves peltate (the petiole attached to the under side). Fruit of 2 small seedlike carpels. **Hydrocotyle** (p. 219).

Leaves not peltate.

Fruit and ovary covered with hooked spines. Leaves deeply lobed; corolla minute, greenish yellow...**Sanicula** (p. 217).

Fruit and ovary never with hooked spines, but rarely with straight ones.

Leaves conspicuously lobed.

Stems and leaves spiny. Sepals 5, united; fruit a smooth berry. **Solanum** (p. 248).

Stems and leaves not spiny.

Corolla of united petals. Fruit a capsule.

Flowers in spikes; corolla very irregular.............**Pedicularis** (p. 254).

Flowers not in spikes; corolla regular......**HYDROPHYLLACEAE** (p. 236).

Corolla of distinct petals, or none.

Calyx lobes 3; fruit sharply 3-angled, dry. Blades of the upper leaves toothed, those of the lower ones deeply pinnate-lobed; plants of very wet situations, the sessile axillary flowers without petals. **Proserpinaca** (p. 215).

Calyx lobes or sepals more than 3; fruit not sharply angled.
  Fruit 1-seeded, indehiscent; flowers small, green, with no corolla. Sepals 5, distinct, or united at the base; plants usually finely white-mealy. **CHENOPODIACEAE** (p. 147).
  Fruit with more than 1 seed, usually dehiscent; petals nearly always present.
    Sepals and petals each 4, the sepals distinct; flowers never blue; mostly in racemes............................**BRASSICACEAE** (p. 163).
    Sepals and petals each 5; flowers sometimes blue.
      Calyx of united sepals; flowers regular. Fruit a capsule, or of 5 or more carpels arranged in a ring; stipules present. **MALVACEAE** (p. 202).
      Calyx of distinct sepals; flowers often very irregular.
        Leaves with stipules; fruit an obtuse capsule. Petals bluish. **Viola** (p. 206).
        Leaves without stipules; fruit of numerous achenes, of several follicles, or a head of berries...**RANUNCULACEAE** (p. 156).
Leaves not lobed, merely toothed.
  Corolla of united petals, colored. Fruit a capsule or a berry.
    Calyx borne on the top of the ovary or fruit; corolla blue or red.
      Corolla split down one side, irregular; stamens united by their anthers. **LOBELIACEAE** (p. 263).
      Corolla not split on one side, regular; stamens free. **CAMPANULACEAE** (p. 262).
    Calyx borne at the base of the ovary or fruit and free from it; corolla usually yellow or white, never red.
      Flowers in spikes or racemes; fruit a smooth capsule..**Verbascum** (p. 249).
      Flowers axillary or in cymes; fruit a berry or a spiny capsule. **SOLANACEAE** (p. 247).
  Corolla of distinct petals, or none.
    Petals none, the calyx small, green; fruit 1-seeded or a 3 or 5-lobed capsule.
      Plants not hairy, or sometimes with glandular hairs; flowers mostly in terminal panicles, cymes, or panicled spikes; stipules none. Fruit 1-seeded or of 5 or 6 carpels.
        Fruit 1-seeded, indehiscent; plants usually glandular-hairy or white-mealy; flowers never in 1-sided cymose spikes. **CHENOPODIACEAE** (p. 147).
        Fruit many-seeded, dehiscent; plants glabrous; flowers in 1-sided spikes. **PENTHORACEAE** (p. 171).
      Plants hairy, but the hairs never glandular; flowers in axillary clusters or spikes; stipules present.
        Flowers in spikes; plants without stinging hairs; fruit a 3-lobed capsule. **Acalypha** (p. 195).
        Flowers in cymes; plants with stinging hairs; fruit an achene. **Urticastrum** (p. 142).
    Petals present; fruit not 1-seeded, but sometimes of numerous achenes.
      Calyx borne on the top of the fruit or ovary and united with it. Petals mostly yellow..................................**ONAGRACEAE** (p. 212).
      Calyx borne at the base of the ovary or fruit and free from it.
        Corolla very irregular, one of the petals spurred.
          Stipules present; leaves about as broad as long and usually cordate at the base, or, if much longer than broad, very hairy; petals white, yellow, greenish, or blue...................**VIOLACEAE** (p. 206).
          Stipules none; leaves much longer than broad, narrowed at the base, abrous; petals yellow or orange...**IMPATIENTACEAE** (p. 201).

Corolla regular or nearly so, none of the petals spurred.
  Leaves very thick and succulent. Petals pink or purple; fruit of several many-seeded follicles.................... **Sedum** (p. 171).
  Leaves thin, never fleshy.
    Sepals and petals each 4. Fruit a 1 or 2-celled pod, usually much longer than wide; stipules none; flowers mostly in racemes. **BRASSICACEAE** (p. 163).
    Sepals or calyx lobes and petals each 5.
      Sepals distinct; fruit of numerous achenes. Petals yellow. **Ranunculus** (p. 158).
      Sepals united, at least below; fruit not of achenes.
        Leaves mostly basal, hairy, the blades rounded, cordate at the base; fruit a 1-celled capsule. Flowers in racemes. **Heuchera** (p. 171).
        Leaves mostly borne on the stems; fruit not a 1-celled capsule.
          Stipules none; flowers in 1-sided spikes; plants glabrous. **PENTHORACEAE** (p. 171).
          Stipules present; flowers never in 1-sided spikes; plants usually pubescent............... **MALVACEAE** (p. 202).

KEY TO THE FAMILIES BASED MAINLY ON FLORAL CHARACTERS.

Division I. PTERIDOPHYTA. Ferns and fern allies.

Plants without true flowers, reproducing by spores (no embryo being formed); fernlike, mosslike, or rushlike plants.

Plants aquatic, inhabiting rock pools and tidal shores; leaves rushlike, tufted upon a very short trunk; sporangia borne within the hollow leaf bases. **ISOETACEAE** (p. 60).
Plants terrestrial; leaves not rushlike; sporangia not borne within hollow leaf bases.
  Stems hollow, jointed, grooved, rough; leaves reduced to toothed sheaths surrounding the joints.................................. **EQUISETACEAE** (p. 58).
  Stems not hollow, jointed, grooved, or rough; leaves minute to very large, never reduced to sheaths upon the stem.
    Leaves minute (1 cm. long or less) and exceedingly numerous, sessile, awllike or bractlike, 4-many-ranked; plants more or less mosslike.
      Plants depressed or short-creeping, not over 3 or 4 cm. high; spores of 2 kinds, megaspores and microspores............... **SELAGINELLACEAE** (p. 60).
      Plants mostly wide-creeping, the simple erect peduncles or bushy aerial branches 10–30 cm. high; spores of one kind, very minute. **LYCOPODIACEAE** (p. 59).
    Leaves very much larger, few, not awllike or bractlike, stalked, fascicled or obscurely 2-ranked; plants not mosslike.
      Plants vinelike, twining; pinnæ palmately 4–7-lobed, borne alternately in pairs. **SCHIZAEACEAE** (p. 53).
      Plants not vinelike or twining; pinnæ not palmately lobed or borne in pairs.
        Sporangia large, sessile, borne in a stalked terminal spike or loose panicle, the sterile blade appearing lateral, simple and entire or several times pinnately divided..................... **OPHIOGLOSSACEAE** (p. 52).
        Sporangia small, stalked, borne in clusters (sori) on the back of ordinary foliage leaves or modified parts of these, or wholly concealed within the hard berry-like or podlike divisions of greatly modified, wholly fertile leaves.

Sporangia associated in definite clusters (sori) on the under side or at the margins of ordinary leaves, or within the hard, contracted divisions of wholly fertile, greatly modified leaves, long-stalked, with a nearly complete vertical ring, rupturing transversely.
POLYPODIACEAE (p. 53).
Sporangia covering thickly some or all pinnæ of the fertile fronds, replacing the ordinary leaf tissue, short-stalked, with a rudimentary apical ring, opening by a longitudinal slit............**OSMUNDACEAE** (p. 52).

Division II. SPERMATOPHYTA. Flowering plants.

Plants with true flowers, reproducing by seeds, these containing an embryo.

Subdivision I. GYMNOSPERMAE.

Ovules not in a closed ovary. Trees with scalelike or needle-like evergreen leaves, the fruit a cone or berry. A single family......................**PINACEAE** (p. 60).

Subdivision II. ANGIOSPERMAE.

Ovules in a closed ovary, this at maturity becoming the fruit.

Class I. MONOCOTYLEDONEAE.

Stems in cross section showing the vascular strands or fibers distributed irregularly through the pith, as in the cornstalk; embryo with a single cotyledon; parts of the flower usually in 3's or 6's, never in 5's; leaves usually parallel-veined. Our species, with the exception of the genera *Arundinaria* and *Smilax*, are herbaceous. In some groups the stems are hollow, except at the nodes; in these cases the vascular strands are aggregate in the exterior zone and may appear as if in a ring. The leaves are net-veined in *Dioscorea*, *Trillium*, and several other genera with broad blades, but even in these they are ribbed with more or less prominent main veins running from base to apex. In the family Lemnaceae there is no distinction between stem and leaf. In some books this class is called endogens.

Perianth none.
  Plants free-floating aquatics, consisting of small ovoid or disk-shaped fronds, less than 10 mm. long..................................**LEMNACEAE** (p. 114).
  Plants with stems and leaves, the latter sometimes reduced to scales.
    Plants immersed aquatics, branching and leafy, the upper leaves often floating.
      Flowers perfect, in spikes; leaves alternate..**POTAMOGETONACEAE** (p. 62).
      Flowers unisexual, axillary, the plants dioecious; leaves opposite.
NAIADACEAE (p. 64).
    Plants terrestrial or growing in marshes, not immersed.
      Flowers subtended or surrounded by small bracts, and aggregate in spikelets; grasslike plants. (See also Sparganiaceae.)
        Leaves 2-ranked, the sheaths usually split; flowers with a second small bract (palea) next to the rachilla; stems cylindric or flattened, usually hollow.
POACEAE (p. 66).
        Leaves 3-ranked, the sheaths not split; flowers with no second bract next to the rachilla; stems solid, usually triangular....**CYPERACEAE** (p. 92).
      Flowers not subtended by bracts, unisexual, the staminate above, the pistillate below on the same axis.
        Leaves petioled, the blade (sometimes divided) net-veined; spike of flowers usually inclosed in a large spathe................**ARACEAE** (p. 113).
        Leaves not petioled, linear, elongate; spike of flowers not inclosed in a spathe.
TYPHACEAE (p. 62).

Perianth present, sometimes small and scalelike.

Divisions of perianth small and scalelike, often shorter than the ovary, free from the ovary (see also Dioscoreaceae).

Leaves petioled, the blades broad and net-veined........... **ARACEAE** (p. 113).

Leaves not petioled, linear,

Flowers in a single whitish involucrate head.... **ERIOCAULACEAE** (p. 115).

Flowers cymose or in heads, the latter not involucrate.

Flowers unisexual, in dense heads, the plants monoecious; perianth of a few obtuse scales, shorter than the fruit...... **SPARGANIACEAE** (p. 62).

Flowers perfect; perianth of 6 greenish or brownish divisions. **JUNCACEAE** (p. 117).

Divisions of perianth more or less petal-like, colored or sometimes greenish.

Pistils several or many in a head or ring. Perianth of 3 outer green sepals and 3 inner white petals; marsh herbs.................. **ALISMACEAE** (p. 64).

Pistil one, the cells or placentæ usually 3.

Perianth free from the ovary.

Stamens 3.

Flowers in a long-peduncled ovoid head; petals yellow; erect marsh or bog plants with long narrow basal leaves..... **XYRIDACEAE** (p. 115).

Flowers few from a short-peduncled spathe; petals yellow, blue, or white; low creeping aquatic plants with scattered leaves. **Heteranthera** (p. 116).

Stamens 6 (rarely 4).

Perianth of 3 herbaceous or greenish sepals and 3 colored petals.

Leaves in a whorl of 3 below the flower; petals withering only with age. **Trillium** (p. 124).

Leaves more than 3, not in whorls; petals delicate, quickly withering. **COMMELINACEAE** (p. 115).

Perianth of 6 divisions, these similar in color, sometimes irregular in shape.

Stamens dissimilar, 3 much longer than the other 3. Aquatic herbs with cordate petioled leaves and purplish flowers in dense spikes. **Pontederia** (p. 116).

Stamens similar.

Plants climbing by tendrils. Fruit a berry. **SMILACACEAE** (p. 124).

Plants without tendrils.

Fruit a berry; basal leaves wanting. Rootstocks present. **CONVALLARIACEAE** (p. 123).

Fruit a capsule; basal leaves usually present.

Styles 3 (united below in *Uvularia*); bulbs and corms usually wanting .... **MELANTHIACEAE** (p. 119).

Style 1; bulbs or corms usually present.. **LILIACEAE** (p. 120).

Perianth adnate to the ovary.

Flowers irregular; stamens 1 or 2; ovules very numerous. **ORCHIDACEAE** (p. 127).

Flowers regular; stamens 3–6; ovules few or numerous.

Plants aquatic, submerged.................. **VALLISNERIACEAE** (p. 66).

Plants terrestrial, sometimes growing in marshes.

Stems twining; leaves cordate............ **DIOSCOREACEAE** (p. 125).

Stems not twining; leaves linear.

Stamens 6; leaves not equitant; outer perianth divisions greenish below............................ **AMARYLLIDACEAE** (p. 125).

Stamens 3; leaves equitant; perianth divisions similar. **IRIDACEAE** (p. 126).

Class II. DICOTYLEDONEAE.

Stems in cross section showing a central pith surrounded by a circle or ring of vascular strands, these often merged into a zone of wood; embryo with two cotyledons; parts of the flower usually in 4's or 5's; leaves net-veined. This class has also been called exogens because there is, especially in the woody plants, a division of the stem into wood and bark with a growing (cambium) layer between, the increase in diameter being by additions from the cambium to the outer part of the wood and to the inner part of the bark.

Division I. CHORIPETALAE.

Petals distinct or wanting. The two lower petals are more or less coherent in Fabaceae; the inner pair of petals is united over the stigma in Fumariaceae; three petals are somewhat coherent in Polygalaceae; all the petals are slightly united at base in *Oxalis*, *Ilex*, and Malvaceae. The division is also called Archichlamydeae. The group without petals has been called Apetalae; the group with distinct petals has been called Polypetalae.

A. Petals none, the sepals sometimes colored like petals. In flowers with superior ovary, if only one series of floral envelopes is present, this is assumed to be the calyx. In flowers with inferior ovary the corolla may be present and the calyx wanting or represented by scales or bristles; such flowers are considered under the division, "petals present," or under Gamopetalae.

Flowers unisexual, one or both kinds in catkins or aments. Trees or shrubs.
  Staminate and pistillate flowers in catkins.
    Ovary many-ovuled. Seeds with copious silky hairs; calyx wanting; stipules present...**SALICACEAE** (p. 132).
    Ovary with 1 ovule in each cell.
      Leaves narrow, acute at base, broadest above the middle; calyx wanting; stipules wanting..............................**MYRICACEAE** (p. 135).
      Leaves ovate to oblong, broadest below the middle; calyx present; stipules present.......................................**BETULACEAE** (p. 136).
  Staminate flowers in catkins; pistillate flowers single or clustered (an oblong or spheric head in Moraceae).
    Pistillate flowers in an oblong or spheric head. Leaves simple.
MORACEAE (p. 141).
    Pistillate flowers single or few in a cluster.
      Leaves pinnate; fruit a large nut inclosed in a dehiscent or indehiscent smooth covering or shuck, the meat or embryo 4-lobed.
JUGLANDACEAE (p. 135).
      Leaves simple; fruit an acorn, or a nut inclosed in a prickly involucre, the meat not lobed.................................**FAGACEAE** (p. 137).
Flowers not in catkins, perfect or unisexual.
  Plants woody (trees or shrubs).
    Leaves opposite.
      Plant a parasite on the branches of trees.......**LORANTHACEAE** (p. 143).
      Plants not parasitic.
        Twigs green or red; fruit a pair of asymmetric samaras; leaves simple (pinnate in *Rulac*)..........................**ACERACEAE** (p. 200).
        Twigs gray; fruit a single symmetric samara; leaves pinnate.
Fraxinus (p. 227).
    Leaves alternate.
      Flowers (at least the pistillate) in dense globose peduncled heads; leaves about as broad as long, palmately lobed or veined.
        Leaves deeply 3–7-lobed; branchlets usually corky-winged.
Liquidambar (p. 173).

Leaves shallowly but sharply several-lobed; twigs smooth.
PLATANACEAE (p. 173).
Flowers clustered, but not in dense globose heads; leaves ovate to elliptic; not lobed (sometimes 3-lobed in *Sassafras*).
Twigs and leaves strongly aromatic; anthers opening by uplifting lids.
LAURACEAE (p. 161).
Twigs and leaves not aromatic; anthers not opening by lids.
Leaves serrate (sometimes entire in *Celtis*), very oblique at base.
ULMACEAE (p. 140).
Leaves entire.
Winter buds pubescent; calyx cup-shaped, scarcely toothed; a shrub.
DAPHNACEAE (p. 211).
Winter buds glabrous; calyx deeply 5-toothed; a tree..**Nyssa** (p. 220).
Plants herbaceous.
Ovary or its cells containing several or many ovules.
Calyx none; plant a small aquatic ....**PODOSTEMACEAE** (p. 171).
Calyx present; plants terrestrial or sometimes growing in water.
Ovary inferior.
Ovary 6-celled; stamens 6–12; plants terrestrial.
ARISTOLOCHIACEAE (p. 143).
Ovary 1 or 4-celled; plants growing in water or on mud.
Ovary 1-celled; stamens 8–10...............**Chrysosplenium** (p. 171).
Ovary 4-celled; stamens 4........................**Ludwigia** (p. 213).
Ovary superior.
Ovaries 2 or more, distinct................**RANUNCULACEAE** (p. 156).
Ovary single.
Leaves compound or deeply many-lobed.
RANUNCULACEAE (p. 156).
Leaves simple.
Leaves alternate. Ovary 5-celled, 5-beaked.
PENTHORACEAE (p. 171).
Leaves opposite or whorled.
Capsule 3-celled; leaves whorled...........**AIZOACEAE** (p. 150).
Capsule 1-celled; leaves opposite.........**ALSINACEAE** (p. 151).

Ovary or its cells containing 1 or 2 ovules..............................B, BB.

B. PISTILS MORE THAN ONE, DISTINCT OR NEARLY SO.

Calyx none. Flowers in nodding spikes; leaves cordate..**SAURURACEAE** (p. 132).
Calyx present.
Stamens inserted on the calyx; stipules present..................**Aphanes** (p. 177).
Stamens inserted on the receptacle; stipules none...**RANUNCULACEAE** (p. 156).

BB. PISTILS SINGLE, SIMPLE OR COMPOUND.

Ovary inferior or so closely invested by the calyx tube as to appear so.
Plants aquatic, the submersed leaves finely divided.
HALORAGIDACEAE (p. 214).
Plants terrestrial.
Leaves opposite; flowers rose or purple, 3–5 in a broad thin involucre.
ALLIONIACEAE (p. 149).
Leaves alternate; flowers without an involucre.
Leaves simple; flowers white, in panicles...........**SANTALACEAE** (p. 143).
Leaves pinnate; flowers in spikes.......................**Sanguisorba** (p. 177).

Ovary superior.

Stipules sheathing the stem at the nodes.............**POLYGONACEAE** (p. 144).

Stipules, if present, not sheathing the stem.

Plants aquatic, submersed or growing on mud, low and delicate.

Leaves whorled, dissected; style 1.........**CERATOPHYLLACEAE** (p. 155).

Leaves opposite, entire; styles 2..............**CALLITRICHACEAE** (p. 197).

Plants not aquatic.

Styles 10. Berry 10-seeded; flowers in racemes. **PHYTOLACCACEAE** (p. 150).

Styles (if present) and stigmas 1–3.

Leaves palmately lobed or divided.......................**Cannabis** (p. 142).

Leaves not palmately lobed.

Ovary 3-celled.................................**EUPHORBIACEAE** (p. 194).

Ovary 1–2-celled.

Ovary 2-celled; flowers in racemes. Pod 2-seeded, circular, flat. **Lepidium** (p. 166).

Ovary 1-celled; flowers not in racemes.

Leaves with branched hairs beneath............**Crotonopsis** (p. 195).

Leaves without branched hairs.

Stipules present.

Flowers unisexual; leaves toothed (except *Parietaria*). **URTICACEAE** (p. 142).

Flowers perfect; leaves entire......**CORRIGIOLACEAE** (p. 150).

Stipules none.

Perianth and bracts scarious......**AMARANTHACEAE** (p. 148).

Perianth and bracts (if present) herbaceous, not scarious. **CHENOPODIACEAE** (p. 147).

AA. Petals present.

Pistils more than 1, distinct (inclosed in a fleshy receptacle in *Rosa*).

Stamens inserted on the calyx (hypanthium)..............**ROSACEAE** (p. 173).

Stamens inserted on the receptacle.

Stamens united in a column by their filaments........**MALVACEAE** (p. 202).

Stamens distinct.

Plants succulent. Stamens twice as many as the petals; follicles many-seeded....................................**CRASSULACEAE** (p. 171).

Plants not succulent.

Plants woody.

Plants climbing; leaves peltate.........**MENISPERMACEAE** (p. 161).

Plants not climbing; leaves not peltate.

Stipules encircling the stem, deciduous but leaving a ring on the twigs..............................**MAGNOLIACEAE** (p. 161).

Stipules none..............................**ANNONACEAE** (p. 161).

Plants herbaceous.

Sepals and petals 3.

Plants aquatic...........................**CABOMBACEAE** (p. 155).

Plants terrestrial.......................**LIMNANTHACEAE** (p. 198).

Sepals and petals 4 or 5.

Carpels distinct........................**RANUNCULACEAE** (p. 156).

Carpels united at base.

Pistil 5-lobed...........................**GERANIACEAE** (p. 190).

Pistil 2-lobed.........................**SAXIFRAGACEAE** (p. 171).

Pistil single.

Leaves punctate with translucent dots.

Leaves simple; herbs or low shrubs; fruit a capsule. **HYPERICACEAE** (p. 204).

Leaves trifoliolate; a tall shrub; fruit a winged nutlet....**RUTACEAE** (p. 192).

Leaves not punctate.

C. Plants woody.

Plants climbing.

Tendrils present..**VITACEAE** (p. 201).

Tendrils none.

Stems twining; leaves simple........................**Celastrus** (p. 199).

Stems climbing by rootlets; leaves compound..**Toxicodendron** (p. 198).

Plants not climbing.

Leaves opposite.

Leaves compound.

Leaves pinnate, with 5 or more leaflets............**Fraxinus** (p. 227).

Leaves 3-foliolate.......................**STAPHYLEACEAE** (p. 200).

Leaves simple.

Fruit fleshy, indehiscent.

Flowers in cymes; stone 2-celled...........**CORNACEAE** (p. 219).

Flowers in panicles; stone 1-celled...........**OLEACEAE** (p. 227).

Fruit dry (aril fleshy in *Euonymus*).

Ovary 2-celled.

Fruit a pair of asymmetric samaras; leaves lobed or compound. **ACERACEAE** (p. 200).

Fruit a capsule; leaves not lobed..**HYDRANGEACEAE** (p. 172).

Ovary 4-celled; fruit a 4 (3–5) -celled capsule, the aril red. **Euonymus** (p. 199).

Leaves alternate.

Pistil a single carpel, forming in fruit a 1-celled pod.

Corolla papilionaceous.........................**FABACEAE** (p. 181).

Corolla not papilionaceous, the odd petal inside the others, nearly regular except in *Cercis*............**CAESALPINIACEAE** (p. 180).

Pistil compound, consisting of more than 1 carpel.

Leaves compound.

Plant prickly..............................**ARALIACEAE** (p. 215).

Plants not prickly.

Ovary 2–5-parted, each part becoming in fruit a samara. **SIMAROUBACEAE** (p. 193).

Ovary entire; fruit a slightly fleshy drupe. **ANACARDIACEAE** (p. 198).

Leaves simple.

Stamens more than 10.

Fruit a globose nut; cluster of flowers attached to a leaflike bract. **TILIACEAE** (p. 202.)

Fruit fleshy; flowers not attached to a leaflike bract.

Fruit a pome, several-seeded............**MALACEAE** (p. 177).

Fruit a drupe, 1-seeded............**AMYGDALACEAE** (p. 179).

Stamens 10 or fewer.

Stamens 5, opposite the petals..........**RHAMNACEAE** (p. 201).

Stamens not of the same number as the petals, or, if of the same number, alternate with them.

Calyx tube adherent to at least the lower part of the ovary.

Ovules 1 in each cell; leaves toothed; fruit a capsule. Flowers appearing in late autumn...........**Hamamelis** (p. 172).

Ovules several in each cell; leaves lobed; fruit a berry. **GROSSULARIACEAE** (p. 172).

Calyx tube free from the ovary.

Fruit fleshy, a berry-like drupe..**AQUIFOLIACEAE** (p. 199).

Fruit a capsule.

Capsule 2-celled; style about equaling the stamens. **ESCALLONIACEAE** (p. 172).

Capsule 3-celled; style much longer than the stamens. **CLETHRACEAE** (p. 220).

CC. Plants herbaceous (slightly woody in Pyrolaceae).

Stamens more than 10.

Stems succulent, flat, the leaves reduced to scales; ovary inferior. **CACTACEAE** (p. 211).

Stems not succulent and flat, the leaves developed; ovary superior (calyx slightly adherent in *Castalia*).

Plants aquatic, with broad floating or emersed blades. **NYMPHAEACEAE** (p. 155).

Plants terrestrial.

Filaments united in a tube..................**MALVACEAE** (p. 202).

Filaments separate.

Leaves peltate, lobed........................**Podophyllum** (p. 160).

Leaves not peltate.

Leaves compound..................**RANUNCULACEAE** (p. 156).

Leaves simple.

Leaves tubular (hollow and pitcher-shaped). **SARRACENIACEAE** (p. 170).

Leaves not hollow.

Leaves fleshy..................**PORTULACACEAE** (p. 150).

Leaves not fleshy.

Calyx tubular, 6-toothed; plants viscid.**Parsonsia** (p. 212).

Calyx of distinct sepals; plants not viscid.

Sepals 2; juice colored.......**PAPAVERACEAE** (p. 162).

Sepals 3–5; juice not colored......**CISTACEAE** (p. 205).

Stamens 10 or fewer.

Stamens as many as petals and opposite them.**BERBERIDACEAE** (p. 160).

Stamens not of same number as petals and opposite them.

Ovary inferior (partly inferior in *Portulaca* and Saxifragaceae).

Ovules and seeds more than 1 in each cell.

Ovary 1-celled.

Sepals or calyx lobes 2; plants succulent. **PORTULACACEAE** (p. 150).

Sepals or calyx lobes 4 or 5; plants not succulent. **SAXIFRAGACEAE** (p. 171).

Ovary 2–4-celled.

Anthers opening by terminal pores; leaves 3-ribbed. **MELASTOMATACEAE** (p. 212).

Anthers not opening by pores; leaves not 3-ribbed.

Ovary slightly inferior; styles 2.............**Saxifraga** (p. 172).

Ovary wholly inferior; style 1, the stigma often lobed. **ONAGRACEAE** (p. 212).

Ovules and seeds single in each cell.

Flowers in simple or compound umbels; stamens 5.

Fruit dry, splitting into seedlike carpels.....**APIACEAE** (p. 215).

Fruit fleshy, a 2–5-seeded drupe.........**ARALIACEAE** (p. 215).

Flowers in spikes.

Plants aquatic, with dissected leaves.....**Myriophyllum** (p. 214).

Plants terrestrial, the leaves not dissected........**Gaura** (p. 213).

Ovary superior.
  Ovary simple.
    Flowers papilionaceous........................**FABACEAE** (p. 181).
    Flowers not papilionaceous..........**CAESALPINIACEAE** (p. 180).
  Ovary compound (the cells, placentæ, styles, or stigmas more than 1).
D, DD.

D. OVARY 1-CELLED.

Corolla irregular.
  Petals 4; stamens 6..................................**FUMARIACEAE** (p. 163).
  Petals 5; stamens 5..**VIOLACEAE** (p. 206).
Corolla regular or nearly so.
  Placentæ central.
    Petals inserted on the throat of the calyx..............**LYTHRACEAE** (p. 211).
    Petals not inserted on the calyx.
      Sepals distinct; petals not stalked....................**ALSINACEAE** (p. 151).
      Sepals united; petals stalked...........................**SILENACEAE** (p. 153).
  Placentæ on the sides of the ovary.
    Leaves with conspicuous stalked glands. Low bog plants.
DROSERACEAE (p. 170).
    Leaves not conspicuously glandular.
      Petals 5; plants climbing by tendrils...........**PASSIFLORACEAE** (p. 211).
      Petals 4; stamens 6; plants not climbing.
        Pod beaked, indehiscent, 2–3-seeded; leaves pinnately lobed.
Raphanus (p. 170).
        Pod dehiscent, many-seeded; leaves palmately compound.
CAPPARIDACEAE (p. 170).

DD. OVARY 2–SEVERAL-CELLED.

Flowers irregular.
  Flowers spurred; leaves crenate-toothed............**IMPATIENTACEAE** (p. 201).
  Flowers not spurred; leaves entire....................**POLYGALACEAE** (p. 193).
Flowers regular or nearly so.
  Plants without chlorophyll..........................**MONOTROPACEAE** (p. 221).
  Plants with chlorophyll.
    Stamens 6 (sometimes 2 in *Lepidium*); petals 4. Flowers usually in racemes.
BRASSICACEAE (p. 163).
    Stamens as many or twice as many as the petals.
      Ovules 1 or 2 in each cell.
        Ovary deeply lobed; pod long-beaked, dehiscing elastically from the base; leaves lobed or divided.......................**GERANIACEAE** (p. 190).
        Ovary not lobed, appearing 10-celled from partitions between the seeds, not long-beaked nor dehiscing from the apex; leaves entire.
LINACEAE (p. 192).
      Ovules, and usually seeds, several in each cell.
        Leaves 3-foliolate.................................**OXALIDACEAE** (p. 191).
        Leaves simple.
          Stipules present between opposite leaves. A low marsh annual.
ELATINACEAE (p. 205).
          Stipules none when the leaves are opposite.
            Leaves alternate; foliage evergreen............**PYROLACEAE** (p. 220).
            Leaves opposite; foliage not evergreen.........**LYTHRACEAE** (p. 211).

Division II. GAMOPETALAE.

Petals present and united, at least at the base. Also called Sympetalae and Metachlamydeae.

Stamens not more numerous than the lobes of the corolla.
  Plants herbaceous, without chlorophyll........................**Monotropsis** (p. 221).
  Plants woody, sometimes low and creeping, with chlorophyll.
    Ovary inferior..**VACCINIACEAE** (p. 224).
    Ovary superior.
      Fruit dehiscent, usually dry; shrubs..................**ERICACEAE** (p. 222).
      Fruit a large berry with several flat seeds; a tree..**DIOSPYRACEAE** (p. 227).
Stamens not more numerous than the corolla lobes.
  Stamens opposite the lobes of the corolla, equaling them in number.
PRIMULACEAE (p. 225).
  Stamens alternate with the lobes of the corolla or fewer.
    Ovary inferior.
      Tendrils present..................................**CUCURBITACEAE** (p. 262).
      Tendrils none.
        Stamens united by their anthers.
          Flowers separate, not involucrate................**LOBELIACEAE** (p. 263).
          Flowers in dense heads surrounded by an involucre.
            Corolla strap-shaped in all the flowers of the head. Juice milky; leaves alternate..............................**CICHORIACEAE** (p. 263).
            Corollas all tubular, or only the outer ones strap-shaped.
              Flowers unisexual, the 2 kinds in separate unlike heads; involucre of the pistillate heads coriaceous and spiny or tuberculate, forming a bur inclosing the achenes; ray flowers none. Flowers greenish or yellowish........................**AMBROSIACEAE** (p. 267).
              Flowers all perfect, or both kinds in the same head or rarely in separate heads, but the heads then all similar in general appearance (except in *Baccharis*); involucre not coriaceous and spiny, not inclosing the achenes as a bur; ray flowers usually present.
ASTERACEAE (p. 268).
        Stamens distinct.
          Leaves alternate; stamens free from the corolla or nearly so. Juice milky.
CAMPANULACEAE (p. 262).
          Leaves opposite or whorled; stamens inserted on the corolla.
            Stamens 1–3, fewer than the corolla lobes. Ovary consisting of a fertile 1-ovuled cell and 2 empty or abortive cells; herbs, without stipules.
VALERIANACEAE (p. 261).
            Stamens 4 or 5.
              Ovary 1-celled. Flowers in dense involucrate heads; herbs, without stipules..................................**DIPSACACEAE** (p. 262).
              Ovary 2–5-celled.
                Leaves without stipules (except *Viburnum pubescens*), opposite.
CAPRIFOLIACEAE (p. 259).
                Leaves with stipules, or whorled............**RUBIACEAE** (p. 257).
    Ovary superior.
      Plants woody.
        Leaves opposite.
          Corolla irregular; fruit a capsule...............**BIGNONIACEAE** (p. 254).
          Corolla regular; fruit indehiscent, dry or fleshy.....**OLEACEAE** (p. 227).
        Leaves alternate.
          Ovary 2-celled; fruit a berry..........................**Lycium** (p. 247).
          Ovary 3–10-celled; fruit a dry (or sometimes fleshy) capsule.
ERICACEAE (p. 222).

- Plants herbaceous.
  - Ovaries more than 1, or, if 1, deeply lobed.
    - Ovary deeply 4-lobed.
      - Leaves alternate; corolla regular (irregular in *Echium*); stems terete. **BORAGINACEAE** (p. 237).
      - Leaves opposite; corolla usually 2-lipped; stems 4-sided. **MENTHACEAE** (p. 239).
    - Ovaries 2, or solitary and 2-horned.
      - Stamens united........................**ASCLEPIADACEAE** (p. 231)
      - Stamens distinct.
        - Ovary 2-horned; stipules present...........**LOGANIACEAE** (p. 228).
        - Ovaries 2; stipules none...................**APOCYNACEAE** (p. 229).
  - Ovary 1, not deeply lobed.
    - Corolla irregular; anther-bearing stamens 2 or 4 (except *Echium* and *Verbascum* with 5).
      - Ovules solitary in the 1–4 cells.
        - Ovary 1-celled; fruit reflexed...............**PHRYMACEAE** (p. 256).
        - Ovary 2–4-celled; fruit not reflexed.......**VERBENACEAE** (p. 239).
      - Ovules 2 to many in each cell.
        - Ovary 1-celled.
          - Plants terrestrial, without chlorophyll; stamens 4. **OROBANCHACEAE** (p. 254).
          - Plants aquatic or growing on mud, chlorophyll-bearing; stamens 2. **PINGUICULACEAE** (p. 255).
        - Ovary 2-celled.
          - Capsule elastically dehiscent; seeds few, borne on hooklike processes of the placentæ......................**ACANTHACEAE** (p. 255).
          - Capsule not elastically dehiscent; seeds numerous, not borne on hooks......................**SCROPHULARIACEAE** (p. 248).
    - Corolla regular.
      - Stamens fewer than the corolla lobes.
        - Stamens with anthers 4.
          - Ovary 2–celled; cells several-seeded..............**Ruellia** (p. 256).
          - Ovary 2–4-celled; cells 1-seeded.........**VERBENACEAE** (p. 239).
        - Stamens with anthers 2.
          - Leaves basal; corolla scarious........**PLANTAGINACEAE** (p. 256).
          - Leaves arranged along the stem; corolla not scarious.**Veronica** (p. 252).
      - Stamens as many as the corolla lobes.
        - Ovary 1-celled.
          - Leaves entire, opposite..................**GENTIANACEAE** (p. 228).
          - Leaves toothed, lobed, or compound, alternate. **HYDROPHYLLACEAE** (p. 236).
        - Ovary 2–4-celled.
          - Plants leafless twining parasites, without chlorophyll. **CUSCUTACEAE** (p. 234).
          - Plants with chlorophyll, not parasitic.
            - Ovary 4-celled; fruit separating into 4 nutlets; plants rough-hairy. **Heliotropium** (p. 237).
            - Ovary 2–3-celled; fruit a capsule or berry; plants glabrous or pubescent but not rough-hairy.
              - Ovary and capsule 3-celled, the style 3-lobed. **POLEMONIACEAE** (p. 235).
              - Ovary and capsule or berry 2-celled.
                - Seeds few, mostly 4; fruit a capsule; plants usually twining. **CONVOLVULACEAE** (p. 233).
                - Seeds many; fruit a capsule or berry; plants not twining (except *Solanum dulcamara*) ....**SOLANACEAE** (p. 247).

ANNOTATED LIST OF SPECIES.

1. OPHIOGLOSSACEAE. Adder's-tongue Family.

Sterile blade simple, entire, with netted veins; sporangia united in 2 rows in a simple slender fleshy spike ....**1. OPHIOGLOSSUM.**

Sterile blade 1–3 times pinnately divided, with free veins; sporangia globose, all distinct, borne in a 1–4-pinnate panicle......................**2. BOTRYCHIUM.**

1. OPHIOGLOSSUM L. ADDER'S-TONGUE.

1. Ophioglossum vulgatum L.

Low moist woods or partially shaded grassy slopes; numerous localities, but nowhere abundant. June–July. Eastern N. Amer.; also in Eur. and Asia.

2. BOTRYCHIUM Swartz. GRAPE FERN.

Sterile blade sessile, the common stalk nearly all above ground; leaf tissue very thin; spores maturing in June..................................**1. B. virginianum.**

Sterile blade long-stalked, the common stalk nearly all below ground; leaf tissue much firmer; spores maturing in autumn.

Segments of the sterile blade mostly acute, the margins minutely toothed. **2. B. obliquum.**

Segments of the sterile blade less acute, deeply cut into slender spreading teeth. **3. B. dissectum.**

1. Botrychium virginianum (L.) Swartz. RATTLESNAKE FERN.

Woods; abundant; attaining its best development in rich hilly woods on the Virginia side of the upper Potomac. First of June. Widely distributed in N. Amer.

2. Botrychium obliquum Muhl.

Low brushy pastures amd moist thin woods; common. Aug.–Oct. Eastern N. Amer. (*B. ternatum obliquum* D. C. Eaton.)

3. Botrychium dissectum Spreng.

Moist woods or thickets; common, but less so than *B. obliquum*. Aug.–Oct. Me. to Va. and Ky.

Botrychium neglectum Wood has been reported, probably in error.

2. OSMUNDACEAE. Flowering fern Family.

1. OSMUNDA L.

Blades coarsely bipinnate, the large segments distant, sessile or short-stalked; apical pinnæ of some of the blades fertile, contracted, forming an upright terminal panicle...**1. O. regalis.**

Sterile blades or parts of blades once pinnate, the pinnæ pinnatifid into small close lobes.

Blades normally of two kinds, wholly fertile or sterile, the former cinnamon-colored, succulent at maturity but quickly withering and disappearing; pinnæ of sterile blade bearing a tuft of tomentum at base......**2. O. cinnamomea.**

Blades either wholly sterile or with 2–6 pairs of middle pinnæ fertile, these shriveling after maturity but persistent; sterile pinnæ lacking tuft of tomentum at base...**3. O. claytoniana.**

1. Osmunda regalis L. ROYAL FERN.

Swamp borders and boggy woods; not uncommon. May–June. N. Amer. generally; also in Eur.

2. **Osmunda cinnamomea** L. CINNAMON FERN.

Wet woods, swamps, and low cut-over areas; abundant. May. Most of eastern N. Amer.; also in Asia.

The spring stage, often known as fiddleheads, is shown in plate 11.

3. **Osmunda claytoniana** L. INTERRUPTED FERN.

Swamp edges, moist wooded slopes, or sandy alluvial soil; not very common, but found throughout. May. Eastern N. Amer.; also in Asia.

3. SCHIZAEACEAE. Curly-grass Family.

1. LYGODIUM Swartz. CLIMBING FERN.

1. **Lygodium palmatum** (Bernh.) Swartz.

Wet thickets and borders of low woods; several restricted localities, Riverdale Swamp, vicinity of Suitland, Lanham, Arundel; probably of commoner occurrence. Sept.–Oct. N. Eng. to Fla. and Tenn.

4. POLYPODIACEAE. Fern Family.

Leaves obviously of two kinds, the fertile ones with narrow, more or less altered divisions.
  Fertile blades with linear simple flat greenish pinnæ, the large narrow sori arranged in a conspicuous double line .... 1. **LORINSERIA.**
  Fertile blades not at all leaflike, the spore-bearing parts greatly contracted, berry-like or necklace-like, brownish, with the sori wholly concealed.
    Sterile blades pinnately parted or divided, with netted veins; fertile parts a close berry-like cluster .... 2. **ONOCLEA.**
    Sterile blades pinnate, the pinnæ very deeply pinnatifid, with free veins; fertile parts much simpler (once pinnate only), coarser, necklace-like. 3. **PTERETIS.**
Leaves uniform, the fertile ones not differing essentially in form from the sterile ones.
  Sporangia borne at the edge of the lobes or segments, either in definite clusters (sori) or as a continuous marginal line.
    Rootstocks widely creeping underground, slender, naked or hairy, devoid of scales.
      Blades erect, narrowly triangular-lanceolate, finely dissected; sporangia borne in minute cuplike indusia at the ends of the veins.... 4. **DENNSTEDTIA.**
      Blades nearly horizontal, broadly triangular, coarse; sporangia borne in a broad line within the margin, protected by a delicate continuous indusium. 5. **PTERIDIUM.**
    Rootstocks erect or short-creeping, with a copious covering of imbricate scales.
      Blades delicate, the very numerous minute beadlike divisions glandular and freely clothed with pale rusty jointed hairs .... 6. **CHEILANTHES.**
      Blades coarser, the pinnules or segments comparatively few and large, flat, neither glandular nor hairy.
        Sporangia borne in a long continuous line, partly protected at first by the slightly revolute unchanged margin of the simple segment, eventually spreading, the margin becoming flat .... 7. **PELLAEA.**
        Sporangia borne in narrowly oblong individual sori, several to each cleft or lobed segment, seated on the inner side of the sharply reflexed modified tip of the lobe .... 8. **ADIANTUM.**
  Sporangia borne on the back of the segments in definite sori, distinctly apart from the margin.
    Blades simple, entire. Leaves 10–30 cm. long, the blades narrow, long-tapering from a cordate base, rooting at the tip, thus giving rise to new plants. 9. **CAMPTOSORUS.**

Blades once to several times pinnatifid or pinnate.
  Margins of pinnæ with numerous slender bristle-like teeth; sori confined to the contracted uppermost pinnæ of some of the blades, large, contiguous, nearly covering the under surface.................. **10. POLYSTICHUM.**
  Margins not with bristle-tipped teeth; sori not confined to tip of blade.
    Veins partly united to form a single series of narrow meshes along the midveins of the pinnæ and segments, the sori confined to these. **11. ANCHISTEA.**
    Veins all free.
      Sori oblong to linear.
        Plants mostly small, 5–30 cm. high, the leaves evergreen; sori straight or slightly curved............................ **12. ASPLENIUM.**
        Plants larger, mostly 50–100 cm. high, the leaves herbaceous, winter-killing; sori curved, often crossing the veinlet and recurved upon it. **13. ATHYRIUM.**
      Sori roundish.
        Blades cut nearly to the midrib, the segments entire or faintly toothed. **14. POLYPODIUM.**
        Blades 1–3 times pinnate, the primary pinnæ sessile or stalked.
          Indusia attached beneath the sporangia and at first inclosing them, at length splitting into several spreading lobes.... **15. WOODSIA.**
          Indusia attached laterally (wanting in one species of *Dryopteris*), thrust to one side by the ripening sporangia.
            Indusia hood-shaped, attached by the broad base, early pushed back by the developing sporangia and partly concealed by them, withering.................................... **16. FILIX.**
            Indusia, if present (lacking in *D. hexagonoptera*), reniform or rounded-reniform, flat or convex, attached at the sinus, usually persistent.................................. **17. DRYOPTERIS.**

1. LORINSERIA Presl.

1. Lorinseria areolata (L.) Presl. CHAIN FERN.
Swamps and other low, permanently moist, shaded situations; not uncommon. Late summer. Me. to the Gulf states; also in Mich. (*Woodwardia angustifolia* J. E. Smith; *W. areolata* Moore.)

2. ONOCLEA L.

1. Onoclea sensibilis L. SENSITIVE FERN.
Moist situations generally; abundant. Late summer. Newf. to the Gulf states, westward.

3. PTERETIS Raf.

1. Pteretis nodulosa (Michx.) Nieuwland. OSTRICH FERN.
Shaded alluvial flood plain of the Potomac, on both sides above Cabin John; rare. First of Sept. N. S. to Va., westward. (*Struthiopteris germanica* and *Matteuccia struthiopteris* of American authors.)

4. DENNSTEDTIA Bernh.

1. Dennstedtia punctilobula (Michx.) Moore. HAY-SCENTED FERN.
Low woods or moist banks; fairly common. Aug. N. S. to Ga., westward. (*Dicksonia pilosiuscula* Willd.)

5. PTERIDIUM Scop.

1. Pteridium latiusculum (Desv.) Maxon. BRAKE. BRACKEN.
Sunny sandy slopes, low thin woods, or old fields, and acid soil situations generally; abundant. Midsummer. Eastern N. Amer. (*Pteris aquilina* and *Pteridium aquilinum* of most authors, in part.)

6. CHEILANTHES Swartz. LIP-FERN.

1. **Cheilanthes lanosa** (Michx.) Watt.
Earthy crevices of cliffs or rocky bluffs; rare; vicinity of Great Falls (both sides of the river) and near Chain Bridge. Summer. Eastern U. S. (*C. vestita* Swartz.)

7. PELLAEA Link.

1. **Pellaea atropurpurea** (L.) Link. CLIFF-BRAKE.
Crevices of dry sunny cliffs or on walls, preferring limestone; several scattered stations, abundant in only one or two localities. Summer. N. Eng. to Minn., the Mexican border, and Fla.

8. ADIANTUM L. MAIDENHAIR.

1. **Adiantum pedatum** L.
Rich, well-drained, rocky, deciduous woods and shaded hillsides; common. Summer. Most of temperate N. Amer., the western form differing subspecifically

9. CAMPTOSORUS Link.

1. **Camptosorus rhizophyllus** (L.) Link. WALKING FERN.
Shaded mossy rocks in cool situations; several localities along the Potomac, principally above Cabin John; also at Laurel; rare. Que. to Ga., westward.

10. POLYSTICHUM Roth.

1. **Polystichum acrostichoides** (Michx.) Schott. CHRISTMAS FERN.
Moist woods and cool shady banks; abundant. About June first. Eastern N. Amer. (*Aspidium acrostichoides* Swartz.)

A colony is shown in plate 12.

11. ANCHISTEA Presl.

1. **Anchistea virginica** (L.) Presl. CHAIN FERN.
Swamps; infrequent, the known localities all in the eastern part of the range. Late summer. Eastern N. Amer. (*Woodwardia virginica* J. E. Smith.)

12. ASPLENIUM L. SPLEENWORT.

Blades pinnatifid, or pinnate only near the base, the apex slender, long-attenuate.

Stipe brown below, green above; rachis green................1. **A. pinnatifidum.**

Stipe and rachis dark purplish brown...........................2. **A. ebenoides.**

Blades 1–3 times pinnate, the apex not long-attenuate.

Stipes and rachises reddish or purplish brown throughout; blades linear, once pinnate only.

Fertile leaves rigidly erect, 20–40 cm. long; sterile leaves short, spreading; segments more or less auricled...........................3. **A. platyneuron.**

Fertile and sterile leaves alike, all spreading, much narrower, 7–20 cm. long; segments not auricled....................................4. **A. trichomanes.**

Stipes green from a dark brown base; rachises green; blades 2 or 3 times pinnate or pinnatifid, more or less triangular...........................5. **A. montanum.**

1. **Asplenium pinnatifidum** Nutt.
Crevices and earth pockets of shaded cliffs; Virginia shore of the Potomac several miles below Great Falls; very rare. Summer. Conn. to Ga., westward.

2. **Asplenium ebenoides** R. R. Scott. SCOTT'S SPLEENWORT.
Crevices of shaded rocks; two records, Plummers Island and Virginia shore of the Potomac near Little Falls. Summer. Vt. to Va., Mo., and Ala.; abundant only in the last state, where it is self-perpetuating.

Demonstrated to be a hybrid between *Camptosorus rhizophyllus* and *Asplenium platyneuron.*

3. **Asplenium platyneuron** (L.) Oakes. EBONY SPLEENWORT.

Grassy or rocky banks and partially shaded situations generally; abundant. Midsummer. N. Eng. to Colo., southward to the Gulf states. (*A. ebeneum* Ait.)

4. **Asplenium trichomanes** L. MAIDENHAIR SPLEENWORT. DWARF SPLEENWORT.

Crevices of cool shaded cliffs; upper Potomac region chiefly; infrequent. Summer. Temperate N. Amer., north of Mex.; also in Eur. and Asia.

5. **Asplenium montanum** Willd. MOUNTAIN SPLEENWORT.

Crevices of dryish cliffs; a single station, above Great Falls on the Virginia side of river; very rare. Conn. to Ohio, southward.

13. ATHYRIUM Roth.

Pinnæ narrowly linear, entire or lightly crenulate.................1. **A. pycnocarpon.**
Pinnæ lanceolate, pinnatifid or pinnate.
  Segments fully adnate, lightly crenate-serrate.............2. **A. thelypteroides.**
  Segments or pinnules mostly sessile, deeply serrate or pinnately incised with toothed lobes....................................3. **A. asplenioides.**

1. **Athyrium pycnocarpon** (Spreng.) Tidestrom.

Moist cool woods and shaded alluvial banks; not common; several localities in Rock Creek Park and along the Potomac. Summer. Que. to Ga., westward. (*Asplenium angustifolium* Michx.)

2. **Athyrium thelypteroides** (Michx.) Desv. SILVERY SPLEENWORT.

Moist rich woods, chiefly in alluvial situations; fairly common, especially along the upper Potomac. Summer. Eastern N. Amer. (*Asplenium thelypteroides* Michx.; *Asplenium acrostichoides* Swartz.)

3. **Athyrium asplenioides** (Michx.) Desv. LADY FERN.

Low woods and moist thickets; abundant. Summer. Eastern U. S. (*Asplenium filix-foemina* in part of American writers, not L.)

14. POLYPODIUM L.

Plants grayish beneath, the lower surface of the blades very densely covered with pale dark-centered peltate scales; sori small, sunken.......1. **P. polypodioides.**
Plants green, the blades devoid of scales; sori superficial................2. **P. vulgare.**

1. **Polypodium polypodioides** (L.) Hitchc. GRAY POLYPODY. RESURRECTION FERN.

Flat mossy rocks or tree trunks; gorge of the Potomac below Great Falls, Maryland side, the only locality. Summer. Pa. to Iowa, southward to the Gulf states and trop. Amer. generally. (*P. incanum* Swartz.)

2. **Polypodium vulgare** L. POLYPODY.

Rocks or rocky banks; common along the upper Potomac and found in a few other localities. Summer. Eastern N. Amer.; also in Eur.

15. WOODSIA R. Br.

1. **Woodsia obtusa** (Spreng.) Torr.

Rocky banks and shaded cliffs; common, especially along the upper Potomac and the canal. Summer. Eastern N. Amer.

16. FILIX Adans. BLADDER FERN.

Blades very narrowly triangular-lanceolate, the apex long-tapering to a slender tip, usually bearing numerous fleshy bulblets beneath.............1. **F. bulbifera.**
Blades broadly lanceolate, slightly narrowed at the base, the apex short-pointed; bulblets wanting...2. **F. fragilis.**

1. **Filix bulbifera** (L.) Underw.

Shaded talus of cliffs; Virginia side of the Potomac in the region opposite Cabin John; very rare. Newf. to northern Ga., westward. (*Cystopteris bulbifera* Bernh.)

2. **Filix fragilis** (L.) Underw. BRITTLE FERN.

Shaded alluvial flats, rocky slopes, and moist woods; abundant in many localities, principally along the Potomac; common. Summer. N. Amer. generally; nearly cosmopolitan. (*Cystopteris fragilis* Bernh.)

17. DRYOPTERIS Adans.

Indusia wanting; blades triangular, usually broader than long; pinnæ adnate to the irregularly winged rachis..1. **D. hexagonoptera.**
Indusia present; blades linear-lanceolate or narrowly oblong to ovate, much longer than broad; pinnæ sessile, the rachis not winged.
  Rootstocks very slender, widely creeping, nearly naked; fronds winter-killing, membranous; veins simple or once forked.
    Lower pinnæ gradually decreasing in size, the lowest ones minute. 2. **D. noveboracensis.**
    Lower pinnæ scarcely smaller than those above.
      Fertile veins simple..3. **D. simulata.**
      Fertile veins once forked..4. **D. thelypteris.**
  Rootstocks stout, short-creeping to erect, conspicuously scaly; fronds mostly evergreen, of firm texture; veins mostly 2 or more times forked.
    Blades leathery; sori very much nearer the margins than the midribs of the segments..5. **D. marginalis.**
    Blades firm, but not thick and leathery; sori about midway from midrib to margin or nearer the midrib.
      Fertile leaves very rigidly erect, tall and slender, long-stalked, the blades linear-oblong to narrowly lanceolate; sterile leaves short, spreading. 6. **D. cristata.**
      Fertile and sterile leaves mostly ascending or spreading, the blades much broader, mostly oblong to ovate.
        Basal scales thick, shining, dark chestnut-colored..........7. **D. goldiana.**
        Basal scales thin, membranous, dull light brown.
          Pinnæ deeply pinnatifid only, the few coarse lobes or divisions all adnate and distinctly joined, the wing very broad toward the tip. 8. **D. clintoniana.**
          Pinnæ essentially pinnate, at least the basal segments free, the others mostly constricted, joined by a faint wing or not.
            Pinnules oblong to oblong-ovate, obtuse or at most acutish.9. **D. boottii.**
            Pinnules mostly oblong-lanceolate, acute.
              Pinnæ oblique to the rachis, the basal ones distant, broadly triangular; pinnules obliquely incised, the lobes with curved spinelike teeth; indusia without glands..10. **D. spinulosa.**
              Pinnæ at right angles to the rachis, the basal ones ovate, strongly unequal-sided; pinnules pinnately divided, the segments with spreading teeth; indusia glandular............11. **D. intermedia.**

1. **Dryopteris hexagonoptera** (Michx.) C. Chr. BEECH FERN.

Dryish or well-drained open deciduous woods; abundant. Midsummer. Eastern N. Amer. (*Phegopteris hexagonoptera* Fée.)

2. **Dryopteris noveboracensis** (L.) A. Gray. NEW YORK FERN.

Moist low woods and thickets; abundant. July. Eastern N. Amer. (*Aspidium noveboracense* Swartz.)

3. Dryopteris simulata Davenp. MASSACHUSETTS FERN.

Woodland swamps; Hollywood Swamp and near Suitland; reported also from one or two other stations. Late summer. Me. to central N. Y. and Md.

4. Dryopteris thelypteris (L.) A. Gray. MARSH FERN.

Marshes and low thickets, especially along streams; common. Midsummer. Eastern N. Amer. (*Aspidium thelypteris* Swartz.)

5. Dryopteris marginalis (L.) A. Gray. MARGINAL SHIELD-FERN.

Rocky hillsides in rich woods; common, chiefly along the upper Potomac. July. N. S. to Br. Col., south to Ga. and Okla. (*Aspidium marginale* Swartz.)

6. Dryopteris cristata (L.) A. Gray.

Swamps and moist or boggy woods; common. July. Newf. to Va. and Ark., northwestward. (*Aspidium cristatum* Swartz; *A. filix-mas* of Ward's Flora.)

7. Dryopteris goldiana (Hook.) A. Gray. GOLDIE'S FERN.

Rich deciduous woods; several stations along the upper Potomac, both sides; rare. N. Br. to Minn. and N. C. (*Aspidium goldianum* Hook.)

8. Dryopteris clintoniana (D. C. Eaton) Dowell. CLINTON'S FERN.

Boggy woods; Lincolnia; very rare. Me. to Wis., south to N. C. (*D. cristata clintoniana* D. C. Eaton.)

9. Dryopteris boottii (Tuckerm.) Underw. BOOTT'S FERN.

Moist wooded ravines; several localities, mostly in runs of the upper Potomac. Summer. N. S. to Minn. and Va. (*Aspidium boottii* Tuckerm.)

Now usually regarded as a hybrid between *D. cristata* and *D. intermedia.*

10. Dryopteris spinulosa (Muell.) Kuntze.

Rich low woods; common throughout the range. Summer. Newf. to Va., northwestward. (*Aspidium spinulosum* Muell.)

11. Dryopteris intermedia (Willd.) A. Gray. WOOD FERN.

Moist or dryish woods; fairly common. Summer. Newf. to Wis., south to N. C. (*Aspidium spinulosum intermedium* D. C. Eaton.)

Besides *Dryopteris boottii* the following hybrids have been collected:

DRYOPTERIS CRISTATA × MARGINALIS Davenp. Two collections, near Great Falls, Va. (*Dowell*).

DRYOPTERIS GOLDIANA × MARGINALIS Dowell. Woods near Kensington (*Dowell*).

Marsilea quadrifolia L. was accidentally introduced in 1880 at Government Fish Ponds, since filled; it has perhaps escaped to the river. Native of Eur. and Asia; possibly native at Bantam Lake, Conn., thence widely introduced from Mass. to Md.

5. EQUISETACEAE. Horsetail Family.

1. EQUISETUM L.

Stems annual and of two kinds, the fertile appearing in spring and early withering, the sterile ones with whorls of numerous branches..................**1. E. arvense.**

Stems perennial, evergreen, alike, without whorls of branches........**2. E. praealtum.**

1. Equisetum arvense L. HORSETAIL.

Sandy or alluvial soil; common. Early spring. Temperate N. Amer. generally, north of Mex.; also in Eur. and Asia.

2. Equisetum praealtum Raf. SCOURING-RUSH.

Alluvial banks of the Potomac and tributary streams; occasional patches, but not common. U. S. generally. (*E. robustum* A. Br.; *E. hyemale* of Ward's Flora.)

6. LYCOPODIACEAE. Club-moss Family.

1. LYCOPODIUM L. CLUB-MOSS.

Spore cases borne in zones along the stem, in the axils of ordinary leaves.
1. L. lucidulum.

Spore cases borne in terminal conelike spikes.
  Plants without leafy aerial branches, the long-stalked fertile spikes arising directly from the prostrate creeping leafy stem.
    Stems short-creeping, the leaves of two kinds, arranged in 4 rows, spreading; stalks of the fertile spikes very slender, with minute scattered bracts.
2. L. carolinianum.
    Stems wide-creeping, the numerous leaves alike, slender, curved upward; stalks of fertile spikes stout, with numerous slender incurved overlapping leaves..**3. L. adpressum.**
  Plants with numerous erect or ascending leafy branches, the spikes terminal on some of these.
    Leaves of the ultimate branches very slender, spreading, arranged in 6 or more rows.
      Stems running horizontally deep in the ground, the few distant aerial branches upright and treelike, with numerous bushy branches; leaves in 6 or 8 rows......................................**4. L. obscurum.**
      Stems prostrate, creeping many feet over the ground, branching horizontally, with numerous very leafy upright branches; leaves in many rows.
5. L. clavatum.
    Leaves of the ultimate branches minute, mostly imbricate, adnate and decurrent, arranged in 4 rows.
      Ultimate leafy branches strongly flattened; leaves of the under row smrller than the others and of different form....**6. L. complanatum flabelliforme.**
      Ultimate leafy branches much narrower, appearing less flat; leaves of the under row slightly smaller than the others but of similar form.
7. L. tristachyum.

1. Lycopodium lucidulum Michx.

Cold damp woods and springy wooded banks, sometimes in beds of sphagnum; infrequent, though of general distribution. Eastern N. Amer.

2. Lycopodium carolinianum L.

Cold sphagnum bog of white gravel and sand; a single locality known, Prince Georges County. N. J. to the Gulf states; a Coastal Plain plant.

3. Lycopodium adpressum (Chapm.) Lloyd & Underw.

Bogs and low open fields, often in running water; abundant at several localities east of Washington. N. Y. to the Gulf states; mainly coastal.

4. Lycopodium obscurum L. GROUND PINE.

Moist woods and thickets; several scattered localities; not very common. Newf. to Alaska, south to Ga.; also in Asia. (*L. dendroideum* Michx.)

5. Lycopodium clavatum L. RUNNING PINE.

Moist thickets and pine woods; apparently rare; Lanham; Sandy Springs; Merrifield. Most of N. Amer.; also in Eur. and Asia.

6. Lycopodium complanatum flabelliforme Fernald. CHRISTMAS GREEN.

Damp woods and thickets; fairly common. N. S. to Minn., south to Va. (Typical *L. complanatum* ranges from Me. northward.)

7. Lycopodium tristachyum Pursh. CHRISTMAS GREEN. GROUND PINE.

Low damp woods and thickets; not uncommon. Eastern U. S. (*L. chamaecyparissus* A. Br.; *L. complanatum sabinaefolium* of Ward's Flora.)

7. SELAGINELLACEAE. Selaginella Family.

1. SELAGINELLA Beauv.

Leaves very numerous, alike, appressed, widely overlapping, many-ranked, linear-lanceolate, ending in a slender whitish awn......................**1. S. rupestris.**

Leaves few, of 2 kinds, 4-ranked, spreading in 2 planes, ovate, acute or cuspidate. **2. S. apoda.**

1. Selaginella rupestris (L.) Spring.

Exposed rocky bluffs; found only in vicinity of Great Falls, both sides of the river. Ont. and eastern U. S.

2. Selaginella apoda (L.) Fernald.

Low moist situations, usually in partial shade; common. Me. to the Gulf states, westward. (*S. apus* Spring.)

8. ISOETACEAE. Quillwort Family.

1. ISOETES L. Quillwort.

Leaves 50–100, erect, 30–60 cm. long, with bast bundles....**1. I. engelmanni valida.**

Leaves 10–30, spreading or recurved, 3–25 cm. long, without bast bundles. **2. I. saccharata.**

1. Isoetes engelmanni valida Engelm.

Temporary pools among rocks; Virginia shore of the Potomac, between Sandy Landing and Great Falls; rare. N. J. to Va.

2. Isoetes saccharata Engelm.

Shallow water between tides, on gravel and sand; banks of the Potomac at Fourmile Run, Hunting Creek, and Mount Vernon; not uncommon. Mass. to Va.

Extremely variable, several forms having been described.

9. PINACEAE. Pine Family.

Leaves scalelike or awl-shaped, opposite............................**4. JUNIPERUS.**

Leaves linear, needle-like.

- Leaves in fascicles..**1. PINUS.**
- Leaves solitary.
  - Leaves stiff, about 10 mm. long, obtuse, persistent, dark green above, pale beneath; cones oblong, 2 cm. long or more, the scales rounded...**2. TSUGA.**
  - Leaves slender, about 15 mm. long, acute, deciduous, light green on both faces; cones globose or nearly so, the scales thick, woody.........**3. TAXODIUM.**

1. PINUS L. Pine.

Leaves 5 in a fascicle; cones more than 9 cm. long, maturing the first year, the scales without bristles...**1. P. strobus.**

Leaves 2 or 3 in a fascicle; cones less than 9 cm. long, maturing the second year, each scale bearing a bristle near the apex.

- Leaves 3 in a fascicle.
  - Leaves 7–12 cm. long; cones ovoid, 3.5–7 cm. long.................**2. P. rigida.**
  - Leaves 15–24 cm. long; cones oblong, 7–12 cm. long.................**3. P. taeda.**
- Leaves 2 in a fascicle.
  - Leaves slender, about 1 mm. in diameter, 6 cm. long or more.....**4. P. echinata.**
  - Leaves stout, about 2 mm. in diameter and 4 cm. long.
    - Cone scales tipped with a slender straight fragile prickle.......**5. P. virginiana.**
    - Cone scales tipped with a thick curved woody persistent prickle. **6. P. pungens.**

1. **Pinus strobus** L. WHITE PINE.

Sparingly on high ground toward Rockville; also reported from Turkey Run, Barnesville, and Occoquan. Northern states, southward in the mountains to Ga. Also in cultivation.

Pinus excelsa Wall., the Himalayan pine, is frequently cultivated. It is a handsome tree similar to *P. strobus*, but with leaves 15–20 cm. long.

2. **Pinus rigida** Mill. PITCH PINE.

Sandy soil, scattered among *Pinus virginiana*. Eastern N. Amer.

3. **Pinus taeda** L. LOBLOLLY PINE.

Found sparingly near our eastern limit; a few trees near Leland Station above Upper Marlboro; common along the Patuxent near the bay. A handsome tree, characteristic of the Coastal Plain from southern N. J. to Tex.

4. **Pinus echinata** Mill. YELLOW PINE.

Sparingly among *Pinus virginiana* in the southern counties of Maryland; west of Mount Vernon. Eastern U. S. (*P. mitis* Michx.)

5. **Pinus virginiana** Mill. SCRUB PINE.

Our characteristic pine, forming forests in sandy soil. Eastern U. S. (*P. inops* Ait.)

6. **Pinus pungens** Lamb. TABLE-MOUNTAIN PINE.

A few trees in Rock Creek Park and on the bluffs of the Virginia shore of the Potomac above Cabin John. In the mountains, particularly along the ridges, from western N. J. to Ga.

Pinus sylvestris L., the Scotch fir, is common in cultivation. It is readily distinguished in its young state from *Pinus virginiana* by its bluish green young leaves and by the absence of bloom on its branchlets, a character conspicuous in our native tree. In America this tree is known under the name Scotch pine, though the European vernacular name is fir, which is applied properly to *Pinus sylvestris* and not to species of *Abies*.

Pinus austriaca Hoess, the Austrian pine, is extensively cultivated. It is readily recognized by its stiff dark green leaves, 12–16 cm. long, which are marked by 10 or 11 resin ducts in the parenchyma.

2. TSUGA Carr.

1. **Tsuga canadensis** (L.) Carr. HEMLOCK.

Virginia shore of the Potomac above Cabin John; abundant at Occoquan. Northern states, south to Va.

3. TAXODIUM L. C. Rich.

1. **Taxodium distichum** (L.) L. C. Rich. BALD CYPRESS.

Swamps and along rivers; south of Bowie; near Marshall Hall. Southern states, north to N. J.

4. JUNIPERUS L. JUNIPER.

1. **Juniperus virginiana** L. RED CEDAR.

Common along the bluffs of the Potomac, in fields, and along roads; often planted. Eastern N. Amer.

The leaves are of 2 kinds, scalelike on the mature trees and subulate on the young growth.

Juniperus communis L., the juniper, cultivated in this region but native farther north, is distinguished by its verticillate subulate leaves, 10 mm. long or more.

10. TYPHACEAE. Cat-tail Family.

1. TYPHA L. CAT-TAIL.

Staminate and pistillate portions of the spike distant; leaves 5 mm. wide. **1. T. angustifolia.**

Staminate and pistillate portions of the spike contiguous; leaves 10 mm. wide. **2. T. latifolia.**

1. Typha angustifolia L.

Marshes and wet places, forming colonies. Eur., Asia, and N. Amer. north of Mex.

2. Typha latifolia L.

Marshes and wet places, forming colonies. Eur., Asia, and N. Amer.

11. SPARGANIACEAE. Bur-reed Family.

1. SPARGANIUM L. BUR-REED.

Fertile flowers sessile; fruit broadly obovoid........................**1. S. eurycarpum.**

Fertile flowers short-pediceled; fruit fusiform.

Inflorescence simple...**2. S. americanum.**

Inflorescence with 1 or 2 weak branches from lower axils. **2a. S. americanum androcladum.**

1. Sparganium eurycarpum Engelm.

Frequent in swamps and marshy margins of streams. Fr. July–Aug. Widely distributed in N. Amer.

2. Sparganium americanum Nutt.

Frequent in the same situations as the last, but usually in shallower water. June–July; fr. Sept. Eastern N. Amer. and Asia.

2a. Sparganium americanum androcladum (Engelm.) Fern. & Eames.

Habitat and range same as for the species. (*S. androcladum* Morong; *S. simplex androcladum* Engelm.)

12. POTAMOGETONACEAE. Pondweed Family.

Leaves alternate; fruit subglobose, short-beaked; flowers perfect. **1. POTAMOGETON.**

Leaves opposite; fruit oblong, long-beaked; flowers monoecious. **2. ZANNICHELLIA.**

1. POTAMOGETON L. PONDWEED.

Leaves of two sorts, the thicker floating ones with a dilated petioled blade, different in form from the thinner submersed ones.

Submersed leaves less than 2 mm. wide.....................**10. P. diversifolius.**

Submersed leaves more than 2 mm. wide.

Submersed leaves linear, with a broad, coarsely cellular-reticulate space each side of the midrib..**1. P. epihydrus.**

Submersed leaves broader than linear, not differentially reticulate.

Floating leaves 30–50-veined; submersed leaves large, wide, often much recurved...**3. P. amplifolius.**

Floating leaves fewer-veined; submersed leaves narrowly lanceolate. **2. P. americanus.**

Leaves all alike, submersed.
  Leaves lanceolate or broader.
    Leaves cordate-clasping..5. **P. perfoliatus.**
    Leaves sessile or short-petioled, not clasping.
      Leaves oblong, sessile, minutely serrate........................6. **P. crispus.**
      Leaves oval or lanceolate, short-petioled, the margin often crisped but not minutely serrate..4. **P. lucens.**
  Leaves linear to setaceous.
    Leaves 2 mm. wide or more, with a broad, coarsely cellular-reticulate space each side of the midrib.....................................1. **P. epihydrus.**
    Leaves narrower or not differentially reticulated.
      Stipules united with the leaves.
        Leaves threadlike; fruit abundant...........................11. **P. pectinatus.**
        Leaves 4–8 mm. wide; plants rarely fruiting................12. **P. robbinsii.**
      Stipules free from the leaves.
        Stems much flattened; leaves 2–4 mm. wide.............7. **P. zosteraefolius.**
        Stems little or not at all flattened; leaves less than 2 mm. wide. Spikes usually few-flowered.
          Plants with translucent wartlike glands on each side of the stem at the insertion of the leaves; fruiting spikes long-stalked......8. **P. pusillus.**
          Plants without such glands; fruiting spikes short-stalked.
            Spikes borne at the ends of the branchlets; fruits plump..9. **P. foliosus.**
            Spikes borne in the leaf axils; fruits appearing as if coiled, hollowed out on the sides...............................10. **P. diversifolius.**

1. **Potamogeton epihydrus** Raf.

Occasional in pools or at margins of slow streams. June–July. Widely distributed in N. Amer. (*P. claytonii* Tuckerm.; *P. nuttallii* Schlecht. & Cham.)

2. **Potamogeton americanus** Schlecht. & Cham.

Common in streams and the canal. Aug. Widely distributed in N. Amer. (*P. lonchites* Tuckerm.)

3. **Potamogeton amplifolius** Tuckerm.

Common in mouths of large creeks below Washington. Fr. June until fall. Eastern and northern N. Amer.

4. **Potamogeton lucens** L.

One specimen collected by Ward near Custis Spring. N. Amer. and Eurasia.

5. **Potamogeton perfoliatus** L. REDHEAD GRASS.

Common in the river and creek mouths below Washington. June–Aug. N. Amer. and Eurasia.

6. **Potamogeton crispus** L.

Frequent in the canal, and in the Potomac and its tributaries below Washington. Eastern U. S.; also in Eur.

Propagates mainly by modified branchlets.

7. **Potamogeton zosteraefolius** Schumacher.

Common in mouths of large creeks below Washington. N. Amer. and Eurasia.

Fruit rare; propagation chiefly by winter buds.

8. **Potamogeton pusillus** L.

River and creek mouths below Washington; apparently scarce. Almost cosmopolitan.

Propagates extensively by winter buds.

9. **Potamogeton foliosus** Raf.

Frequent in pools and slow streams. July. Nearctic Amer. (*P. pauciflorus* Pursh.)

10. Potamogeton diversifolius Raf.

Common in shallow pools and at margins of quiet waters; rock pools at Great Falls; edge of canal. Fr. July–Aug. Nearly throughout the U. S. (*P. hybridus* Michx.)

The characters supposed to distinguish *P. dimorphus* Raf. from *P. diversifolius* are neither prominent, constant, nor important. Specimens possessing the diagnostic points of both forms are readily found.

11. Potamogeton pectinatus L. SAGO PONDWEED.

Abundant in quiet waters. Fr. July to fall. Cosmopolitan.

Notable for its abundant tubers which are eagerly sought by waterfowl.

12. Potamogeton robbinsii Oakes.

Common in the mouths of large creeks below Washington. Northern U. S.

Rarely fruits.

Potamogeton natans L., recorded by Ward from the Eastern Branch, is not represented by specimens.

2. ZANNICHELLIA L. HORNED PONDWEED.

1. Zannichellia palustris L.

Occasional along the edge of the river and canal. Fr. July–Sept. Cosmopolitan.

13. NAIADACEAE.

1. NAIAS L. BUSHY PONDWEED.

Basal auricles of the leaves rounded, toothed on the even margin; leaves linear, the teeth frequent.
  Stem slender, many-leaved, usually much branched .... **1. N. flexilis.**
  Stem stout, few-leaved, sparsely branched, elongate ...... **1a. N. flexilis robusta.**
Basal auricles of the leaves pectinate, toothed on the irregular divisions; leaves threadlike, the teeth sparse .... **2. N. gracillima.**

1. Naias flexilis (Willd.) Rostk. & Schmidt.

Abundant in the canal and other quiet waters. Fr. July. Northern Hemisphere.

Entire process of fertilization takes place under water.

1a. Naias flexilis robusta Morong.

Found with the species.

2. Naias gracillima (A. Br.) Magnus.

Abundant in a pool at Widewater. Northeastern U. S.

14. ALISMACEAE. Water plantain Family.

Flowers 2–2.5 mm. wide, in large panicles; achenes borne in a single whorl; leaves ovate, cordate. Flowers all perfect .... **1. ALISMA.**
Flowers 4–15 mm. wide, usually in whorls of 3 (sometimes 2 in *Lophotocarpus*); achenes borne in a dense head; leaves arrow-shaped, or else acute at the base.
  Pedicels very stout; lower flowers of the inflorescence perfect. **2. LOPHOTOCARPUS.**
  Pedicels slender; lower flowers of the inflorescence pistillate.... **3. SAGITTARIA.**

1. ALISMA L.

1. Alisma subcordatum Raf. WATER PLANTAIN.

Shallow water and mud; along the canal, and flats below Chain Bridge; probably fairly common in similar locations. June–Sept. Eastern U. S. (Listed as *A. plantago*, *A. plantago americanum*, and *A. plantago-aquatica*.)

Echinodorus radicans (Nutt.) Engelm. has been reported by Steele, "along a depression in the flats below Chain Bridge, perhaps a dozen specimens, some well developed, August 1, 1900."

2. LOPHOTOCARPUS T. Durand.

1. **Lophotocarpus calycinus** (Engelm.) J. G. Smith.

Apparently rare; collected only by Steele in the "Eastern Branch below the Navy Yard, growing in tide mud;" reported as growing "below Alexandria." Sept. Southern states, north to Del.

3. SAGITTARIA L. ARROWHEAD.

Leaves linear to elliptic or ovate (plants rarely with one or more hastate leaves in *S. rigida*).
  Leaves usually 3–10 (sometimes 20) cm. long; filaments glabrous; plants dwarfish. Beak of the achene erect or nearly so........................**1. S. subulata.**
  Leaves 12–25 cm. long; filaments glandular-pubescent; plants larger.
    Bracts acute, 3–6 mm. long, united to the middle or beyond; beak of the achene horizontal, very short..**2. S. graminea.**
    Bracts obtuse, 4–8 mm. long, united at the base or sometimes distinct; beak of the achene erect or nearly so, about one-fourth the length of the body. **3. S. rigida.**
Leaves arrow-shaped.
  Lobes of the leaves very narrowly linear (1–3 mm. wide). Beak of the achene erect. **4. S. engelmanniana.**
  Lobes of the leaves broader (at least 7 mm. and often 90–120 mm. wide).
    Bracts and pedicels pubescent. Beak of the achene horizontal...**5. S. pubescens.**
    Bracts and pedicels glabrous.
      Fertile pedicels much longer than the broadly triangular, obtuse, acute, or occasionally acuminate bracts; beak of the achene horizontal. **6. S. latifolia.**
      Fertile pedicels shorter than the triangular-lanceolate acuminate bracts; beak of the achene nearly erect...............................**7. S. longirostra.**

1. **Sagittaria subulata** (L.) Buchenau.

Tide-water mud along the Potomac and Eastern Branch; common. July–Sept. N. Y. to Fla. (*S. pusilla* Nutt.)

2. **Sagittaria graminea** Michx.

In the same localities as the preceding species. July–Sept. Eastern N. Amer.

3. **Sagittaria rigida** Pursh.

Swamps and shallow water; probably common throughout the region. July–Sept. Eastern states, south to Md. (*S. heterophylla* Pursh.)

4. **Sagittaria engelmanniana** J. G. Smith.

Collected only by Steele, who says: "First collected, in sterile condition only, in a swampy pasture near Ardwick, Md., September 6, 1899. Two or three fruiting specimens were found on the water's edge at Great Falls, October 3, 1899. * * * Determination confirmed by Mr. J. G. Smith." Mass. to Va.

5. **Sagittaria pubescens** Muhl.

Common in shallow water, ditches, and swamps. July–Sept. Eastern states, south to Va. (*S. latifolia pubescens* J. G. Smith.)

6. **Sagittaria latifolia** Willd.

Common in habitats similar to those given for the preceding species. July–Sept. General in N. Amer. except the subarctic zone. (*S. variabilis* Engelm.; *S. variabilis angustifolia* A. Gray.)

7. **Sagittaria longirostra** (Micheli) J. G. Smith.

Collected only by Steele, "in moderate quantity in the marsh around the mouth of Oxon Run, opposite Alexandria. August 18, 1900." Southern states, north to N. J.

15. VALLISNERIACEAE. Eel-grass Family.

Plants with branching stems, without tubers; leaves ovate-oblong to linear, 0.5–2 cm. long, opposite or whorled; staminate flowers axillary, the sepals and petals 3; pistillate flowers with a 6-parted perianth and a long capillary tube.
1. ANACHARIS.

Plants stemless, stoloniferous, producing winter tubers; leaves linear, grasslike, 5-nerved, 40–150 cm. long, 1–2 cm. wide; staminate flowers numerous on a conic receptacle, inclosed in a spathe, the perianth 3-parted; pistillate flowers single on a long scape reaching the surface of the water and coiling spirally during the maturing of the fruit, the perianth 3-parted, the tube adherent to the ovary.
2. VALLISNERIA.

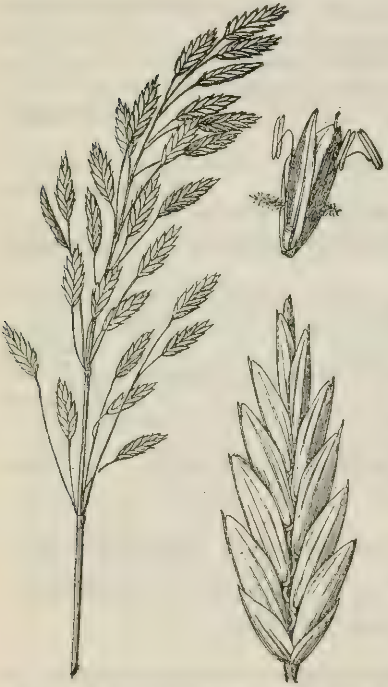

FIG. 1—The inflorescence, spikelet, and floret of a grass (*Bromus secalinus*).

1. ANACHARIS L. Rich.

1. Anacharis canadensis (Michx.) Babingt.
WATER-WEED.

Abundant in the Potomac. June–July. Eastern N. Amer. (*Elodea canadensis* Michx.; *Philotria canadensis* Britton.)

2. VALLISNERIA L.

1. Vallisneria spiralis L.
EEL-GRASS. WILD CELERY.

Abundant in the Potomac and its tributaries. July. Eastern states, south to N. C.

16. POACEAE. Grass Family.

The cultivated grains of the region are often found growing spontaneously in waste places, especially in the vicinity of freight stations and along railways. These are mentioned under their respective genera, except corn or maize (*Zea mays* L.). The commoner ornamental grasses are: eulalia, *Miscanthus sinensis* Anderss.; plume-grass, *Cortaderia argentea* (Nees) Stapf, a tall reed, growing in large clumps, with numerous long narrow drooping blades, a flower stalk 1–2 meters long, surmounted by a silvery white plume 30–60 cm. long; and two species of *Pennisetum*, 60–100 cm. high, used as border plants, *P. villosum* R. Br., with short broad heads and plumose bristles, and *P. rupellii* Steud., the fountain grass, with slender rose-colored spikes tapering at the apex.

The grass flower consists normally of a pistil and 3 stamens contained between 2 small bracts, these being aggregated in spikelets (Fig. 1). The spikelet is made up of a central axis (*rachilla*) upon which the bracts are arranged in 2 ranks. The lowermost pair of bracts (*glumes*) are without flowers. The succeeding bracts (*lemmas*) have flowers and an inner bract (*palea*) next the rachilla. The lemma, palea, and flower are together called the floret. If a lemma contains no flower it is called a sterile lemma. The spikelets may be 1-flowered or several-flowered and are almost always aggregate in an inflorescence.

Spikelets with 1 perfect terminal floret (unisexual in Maydeae and in *Zizania*) and a sterile or staminate floret below, usually represented by a sterile lemma only; rachilla articulate below the glumes, the more or less dorsally compressed spikelets falling entire, singly or together with the joints of an articulate rachis or with a subtending involucre.

Glumes indurate; lemma and palea hyaline; spikelets falling with the joints of the rachis attached.

Spikelets unisexual, in racemes, the pistillate below, embedded in the indurate thickened axis, the staminate in pairs above on the same axis, falling after anthesis..**I. MAYDEAE.**

Spikelets all perfect, or with a staminate or neuter one pedicellate at each joint of the rachis....................................**II. ANDROPOGONEAE.**

Glumes membranaceous; fertile lemma and palea indurate; rachis not disjointing (spikelets falling with the inclosing bur in *Cenchrus*). First glume sometimes wanting, the second glume and sterile lemma simulating a pair of glumes. **III. PANICEAE.**

Spikelets 1-many-flowered, if 1-flowered no sterile lemma below (2 sterile lemmas below in Phalarideae, 1–4 sterile lemmas below in *Uniola*); rachilla usually articulate above the glumes, these persistent on the pedicel, or in a few genera articulate below the glumes; spikelets laterally compressed.

Glumes obsolete. Spikelets 1-flowered............................**IV. ORYZEAE.**

Glumes developed or the first rarely obsolete.

Spikelets with a pair of sterile lemmas (reduced to minute scales in *Phalaris*) below the one perfect floret, falling attached to it. Panicles narrow. **V. PHALARIDEAE.**

Spikelets with no sterile lemmas below the perfect ones (a staminate lower floret in *Arrhenatherum;* 1–4 sterile lemmas below the several perfect florets in *Uniola* persistent with the glumes).

Inflorescence of solitary, racemose, or digitate spikes or racemes, the spikelets sessile or only shortly pedicellate.

Spikelets borne on one side of the axis only (1-sided arrangement somewhat obscure in *Gymnopogon* and *Leptochloa*)..........**VIII. CHLORIDEAE.**

Spikelets alternate on opposite sides of the axis.............**X. HORDEAE.**

Inflorescence of open or contracted panicles.

Spikelets 1-flowered, the rachilla sometimes prolonged behind the palea. **VI. AGROSTIDEAE.**

Spikelets 2–many-flowered.

Glumes usually exceeding the approximate florets or at least the lower; lemmas awned from the back or from between the teeth of a bifid apex (glumes about equaling the lower floret and usually awnless in *Sphenopholis*)....................................**VII. AVENEAE.**

Glumes shorter than the lowermost floret, the florets not closely approximate; lemmas awnless or awned from the apex (apex minutely bifid in *Bromus.*)

Plants herbaceous..............................**IX. FESTUCEAE.**

Plants woody....................................**XI. BAMBOSEAE.**

Tribe I. MAYDEAE.

A single genus..**1. TRIPSACUM.**

Tribe II. ANDROPOGONEAE.

Spikelets all alike. Plants robust, tall.

Inflorescence a large grayish fan-shaped panicle of slender woolly racemes; rachis not disarticulating..**2. MISCANTHUS.**

Inflorescence a dense, narrowly ovoid, woolly panicle; rachis disarticulating. **3. ERIANTHUS.**

Spikelets of 2 kinds, one sessile and perfect, one pedicellate and staminate or neuter (rudimentary in *Sorghastrum*) at each joint of the rachis.

Spikelets in slender, solitary or digitate racemes, these terminal and lateral. **ANDRGON.**

Spikelets in panicles, these terminal only.
  Sterile spikelets reduced to the plumose pedicel; panicles narrow, golden bronze. 5. **SORGHASTRUM.**
  Sterile spikelets developed, usually staminate; panicles open......6. **HOLCUS.**

Tribe III. PANICEAE.

Spikelets inclosed in globular spiny burs, these racemose. A spreading annual. 12. **CENCHRUS.**
Spikelets not inclosed in a bur.
  Spikelets subtended by 1 to several slender bristles, arranged in a narrow spikelike panicle..11. **CHAETOCHLOA.**
  Spikelets not subtended by bristles.
    Spikelets subsessile along one side of a slender axis. First glume obsolete or minute.
      Racemes subdigitate; fruit subindurate, with a flat white hyaline margin; spikelets compressed, biconvex; annuals............7. **SYNTHERISMA.**
      Racemes solitary or racemose; fruit indurate, the firm margin inrolled; spikelets plano-convex; perennials. First glume obsolete...8. **PASPALUM.**
    Spikelets in open or compact panicles.
      Sterile lemma awnless; fruit not pointed; spikelets usually long-pediceled. 9. **PANICUM.**
      Sterile lemma awned or strongly mucronate; fruit pointed; spikelets short-pediceled, in clusters. Coarse annuals............10. **ECHINOCHLOA.**

Tribe IV. ORYZEAE.

Spikelets unisexual, the pistillate awned, borne on the erect upper branches of a large panicle, the staminate awnless, pendulous on the spreading lower branches of the same panicle; large annual marsh grass ....13. **ZIZANIA.**
Spikelets perfect, awnless; low scabrous perennials.....14. **HOMALOCENCHRUS.**

Tribe V. PHALARIDEAE.

Sterile lemmas consisting of minute awnless scales attached at the base of the indurate fruit; glumes keeled; plants not fragrant.......................15. **PHALARIS.**
Sterile lemmas awned, exceeding the fruit; glumes not strongly keeled; plants fragrant...16. **ANTHOXANTHUM.**

Tribe VI. AGROSTIDEAE.

Lemmas subindurate, at least firmer than the glumes, awned or sharp-pointed, terete or subterete, the palea inclosed.
  Awn trifid, the lateral divisions sometimes short..................17. **ARISTIDA.**
  Awn simple.
    Glumes 8–10 mm. long; awns 4–7 cm. long, twisted and bent. Panicle loose and open...18. **STIPA.**
    Glumes not over 6 mm. long, usually much shorter; awns not over 3 cm. long, not twisted or bent.
      Rachilla prolonged behind the palea; glumes minute; lemma 1 cm. long, terminating in a slender awn 2–3 cm. long......20. **BRACHYELYTRUM.**
      Rachilla not prolonged behind the palea; lemma not over 3 mm. long, awned or awnless..19. **MUHLENBERGIA.**
Lemma not firmer than the glumes, usually thinner in texture.
  Glumes strongly compressed-keeled. Panicle dense, cylindric, spikelike.
    Lemma awnless; glumes abruptly aristate, stiffly ciliate on the keel; rachilla articulate above the glumes...............................21. **PHLEUM.**
    Lemma with a slender awn from the back; glumes not aristate, the margins connate toward the base, not stiffly ciliate; rachilla articulate below the glumes. 22. **ALOPECURUS.**

Glumes more or less compressed but not conspicuously flattened and keeled.
  Rachilla not prolonged behind the palea. Floret neither stipitate nor with a hairy callus.
    Lemma longer than the glumes or equaling them; palea equaling the lemma or longer; panicles narrow, more or less included in the sheaths. 23. **SPOROBOLUS.**
    Lemma shorter than the glumes; palea shorter than the lemma or obsolete; panicles open, exserted........................25. **AGROSTIS.**
  Rachilla prolonged behind the palea as a plumose or naked stipe. Lemma with an inconspicuous awn.
    Rachilla and callus bearing silky hairs nearly as long as the floret; floret not stipitate; rachilla articulate above the glumes; awn from below the middle of the lemma........................26. **CALAMAGROSTIS.**
    Rachilla and callus naked; floret stipitate; rachilla articulate below the glumes; awn minute, from just below the tip of the lemma............24. **CINNA.**

Tribe VII. AVENEAE.

Glumes dissimilar in shape, the first narrow, the second wider above, about as long as the first floret; spikelets awnless, articulate below the glumes..31. **SPHENOPHOLIS.**
Glumes similar in shape, exceeding the floret; spikelets awned, usually articulate above the glumes.
  Rachilla not prolonged behind the palea; spikelets not over 4 mm. long; delicate annuals........................28. **AIRA.**
  Rachilla prolonged behind the palea of the uppermost floret; spikelets more than 4 mm. long; perennials (except *Avena*).
    Articulation below the glumes; florets 2, dissimilar, the lower awnless, the upper with a hooklike awn. Plants velvety....................27. **NOTHOLCUS.**
    Articulation above the glumes (except in *Trisetum*); florets similar (except in *Arrhenatherum*).
      Florets 2, the lower staminate and awned, the upper perfect and awnless. 33. **ARRHENATHERUM.**
      Florets 2 to several, all perfect, awned (except sometimes in *Avena*).
        Awn from between the teeth of the bifid lemma, flat, twisted; spikelets several-flowered........................34. **DANTHONIA.**
        Awn dorsal, not flattened; lemma often bifid at apex; spikelets 2 or 3-flowered.
          Spikelets large, the glumes over 1 cm. long..................32. **AVENA.**
          Spikelets less than 1 cm. long.
            Lemmas keeled, bidentate; awn arising from above the middle. 30. **TRISETUM.**
            Lemmas convex; awn from below the middle.....29. **DESCHAMPSIA.**

Tribe VIII. CHLORIDEAE.

Spikes digitate or subdigitate. Spikelets awnless.
  Spikelets 1-flowered, the spikes slender; a stoloniferous perennial...35. **CAPRIOLA.**
  Spikelets several-flowered, the spikes flat, rather broad; an annual..38. **ELEUSINE.**
Spikes racemose along the axis.
  Articulation below the glumes, the compactly crowded spikelets falling entire; second glume exceeding the single awnless floret. Spikes relatively short and stout........................36. **SPARTINA.**
  Articulation above the glumes; glumes shorter than the awned florets.
    Spikelets with 1 perfect floret (a rudimentary floret above it), remote and appressed along a rigid filiform axis, the long slender spikes stiffly spreading or reflexed; blades firm, short, broad, and spreading..37. **GYMNOPOGON.**
    Spikelets with several perfect florets; spikes ascending; blades long and lax. 39. **LEPTOCHLOA.**

Tribe IX. FESTUCEAE.

Plants tall and stout, 2–4 meters high; inflorescence a large plumelike panicle.
40. PHRAGMITES.
Plants low or moderately tall, rarely over 1.5 meters high; inflorescence not plumelike.
  Lemmas prominently 3-nerved.
    Lemmas villous on the nerves below; panicle large, drooping, viscid.
41. TRIDENS.
    Lemmas glabrous; panicles not viscid, sometimes odoriferous.
42. ERAGROSTIS.
  Lemmas 5–many-nerved.
    Upper florets reduced, the empty lemmas inclosed one within the other, forming a club-shaped mass. Glumes broad and papery; spikelets in a small panicle, pendulous on capillary pedicels........................... **43. MELICA.**
    Upper florets not differing from the lower in shape.
      Spikelets with 1–4 sterile lemmas below the fertile ones, these persistent with the glumes... **44. UNIOLA.**
      Spikelets with no sterile lemmas below the fertile ones.
        Spikelets strongly flattened, subsessile in 1-sided clusters at the ends of long naked panicle branches, these spreading in anthesis, erect in fruit.
45. DACTYLIS.
        Spikelets neither strongly flattened nor in clusters.
          Lemmas awnless, obtuse or subacute.
            Lemmas keeled, the spikelet compressed; nerves rather faint...**46. POA.**
            Lemmas convex, the spikelet turgid or subterete; nerves usually prominent.................................**47. PANICULARIA.**
          Lemmas awned or sharp-pointed.
            Lemmas rounded on the back, the awn, if present, from the tip.
48. FESTUCA.
            Lemmas keeled toward the summit, awned from between 2 minute teeth (awn very short in *B. unioloides*)....................**49. BROMUS.**

Tribe X. HORDEAE.

Spikelets more than one at each node of the rachis, awned.
  Spikelets not all alike, the cluster consisting of a sessile perfect spikelet with a pediceled spikelet reduced to the 2–4 awns on each side......**54. HORDEUM.**
  Spikelets all alike.
    Glumes well developed; spikelets appressed or ascending, imbricate.
55. ELYMUS.
    Glumes obsolete or reduced to small bristles; spikelets remote, horizontally spreading...**56. HYSTRIX.**
Spikelets solitary at each node of the rachis.
  First glume (except in the terminal spikelet) wanting; spikelets placed edgewise to the rachis..**50. LOLIUM.**
  First glume present; spikelets placed flatwise to the rachis.
    Rachilla disarticulating between the florets; plants perennial.
51. AGROPYRON.
    Rachilla disarticulating above the glumes only; plants annual.
      Glumes subulate, 1-nerved; lemmas ciliate on the keel and exposed margin.
52. SECALE.
      Glumes lanceolate, 3-nerved; lemmas not ciliate............**53. TRITICUM.**

Tribe XI. BAMBOSEAE.

A single genus...**57. ARUNDINARIA.**

1. TRIPSACUM L.

1. Tripsacum dactyloides L. GAMA GRASS.

Low moist or wet ground; abundant in a few localities in the flood plains of the Potomac and occasional elsewhere. Aug. Southeastern U. S., north to N. Eng.

Growing in large clumps and forming hard mats of thick horizontal rootstocks lying on or near the surface. This and *Zizania palustris* are the only native monoecious grasses of this region.

2. MISCANTHUS Anderss.

1. Miscanthus sinensis Anderss. EULALIA.

Escaped from cultivation and established on wooded hillsides in the vicinity of Mount Pleasant, Cleveland Park, Chevy Chase, and Forest Glen. Aug.–Sept. Native of Asia.

Cultivated for ornament; growing in large tufts, with numerous narrow blades 60–120 cm. long, and slender upright flower stalks 1–2 meters high, bearing fan-shaped clusters of woolly racemes 15–30 cm. long. The blades are often variegated with bands or stripes. Known to gardeners as *Eulalia japonica.*

3. ERIANTHUS Michx.

1. Erianthus saccharoides Michx.

Wet meadows and swales; occasional in the vicinity of Brightwood and Kenilworth. Aug.–Oct. Southern states, north to N. J. (*E. alopecuroides* of Ward's Flora.)

A striking species, with culms as much as 2 meters tall, bearing a dense feathery plume 10–20 cm. long. Our form with somewhat more compact panicles has been described as *E. compactus* Nash.

Arthraxon ciliaris cryptatherus Hack. has been found on the Chevy Chase golf course. Culms creeping; blades ovate-lanceolate, cordate, ciliate at base; racemes slender, several in a fascicle. Introduced from Japan.

4. ANDROPOGON L.

Racemes borne singly on the few to many branches. (Subgenus *Schizachyrium*). **1. A. scoparius.**

Racemes 2 to several together, digitate or nearly so, the common peduncle often inclosed in a bractlike sheath or spathe, these sometimes in groups forming a compound inflorescence.
  Pedicellate spikelet staminate, as large as the sessile spikelet; terminal racemes 2 to several, exserted on a naked peduncle, the uppermost sheath inconspicuous, not inflated, the lateral inflorescences usually less exserted; rachis straight and stiff, the hairs inconspicuous and shorter than the spikelets...**2. A. furcatus.**
  Pedicellate spikelet reduced to 1 or 2 empty glumes; racemes in pairs from a broad, conspicuous, usually inflated spathe; rachis flexuous, capillary, the hairs conspicuous and as long as or longer than the spikelets.
    Uppermost pair of racemes long-peduncled, their spathe inconspicuous, the lateral pairs short-peduncled from large, inflated, aggregate, sometimes blade-bearing sheaths....................................**3. A. elliottii.**
    Uppermost pair of racemes on peduncles not longer than those of the lateral ones, all the spathes about equally inflated.
      Spathes scattered or in small clusters along the slender culm; spikelets about 3 mm. long..**4. A. virginicus.**
      Spathes aggregate in a dense, flabellate or oblong, compound inflorescence; spikelets about 4 mm. long.............................**5. A. glomeratus.**

1. **Andropogon scoparius** Michx. LITTLE BLUESTEM.

Dry open hillsides and open woods; common. Eastern U. S. (*Schizachyrium scoparium* Nash.)

Like the other species of the genus an autumn grass. Sometimes called broom sedge, but this name more properly belongs to *A. virginicus*, although the specific name refers to a broom. The seeds of this and all our other species except *A. furcatus* are dispersed by the wind, the rachis disarticulating, the woolly joints with spikelets attached being easily blown about.

2. **Andropogon furcatus** Muhl. BIG BLUESTEM.

Open grassy ground and rocks along the Potomac; frequent. Eastern U. S.

Taller than any other of our species of this genus. Often glaucous. A good forage grass.

3. **Andropogon elliottii** Chapm.

Sterile open ground; frequent; especially abundant in the open land at College Park and near Chevy Chase. Southeastern U. S., especially on the Coastal Plain, north to Del.

Culms stiffer and not so tall as those of *A. virginicus*, the crowded inflated upper sheaths bright pinkish or orange brown and persisting through the winter.

4. **Andropogon virginicus** L. BROOM SEDGE.

Dry sterile open ground, open woods, and old fields; common. Southeastern U. S., north to Mass.

Especially characteristic of acid soils in old fields. Turning bright rosy or orange brown in November and standing until late February, forming, together with *Andropogon elliottii*, a conspicuous feature of the winter landscape.

Andropogon ternarius Michx. (*A. argenteus* Ell.) is listed in Ward's Flora, but probably does not occur within our limits.

5. **Andropogon glomeratus** (Walt.) B. S. P.

Open swamps; infrequent; Brightwood and eastward. Coastal Plain, from N. Eng. southward. (*A. macrourus* Michx.)

5. SORGHASTRUM Nash.

1. **Sorghastrum nutans** (L.) Nash. INDIAN GRASS.

Common in open dry ground, old fields, and open woods. Aug.–Sept. Eastern U. S. (*Sorghum nutans* A. Gray; *Sorghastrum avenaceum* Nash.)

The long panicles of golden brown spikelets with orange anthers are strikingly handsome when in bloom, turning bronze at maturity.

6. HOLCUS L. SORGHUM.

To this genus belongs the cultivated *H. sorghum* L. (*Sorghum vulgare* Pers.; *Andropogon sorghum* Brot.), the varieties of which are known as sorghum or sorgo, Kafir, Milo, Durra, and others, found occasionally growing spontaneously where the seed has been accidentally scattered.

1. **Holcus halepensis** L. JOHNSON GRASS.

Commonly escaped from cultivation from Va. southward and westward throughout the country; rare in waste ground in our region. Native of Eur. and Asia. (*Sorghum halepense* Pers.)

7. SYNTHERISMA Walt.

Culms erect, branching at the base; rachis not winged............**1. S. filiformis.**
Culms decumbent, sometimes extensively creeping, branching throughout; rachis wing-margined.
  Foliage glabrous; fruit brown; first glume wanting................**2. S. ischaemum.**
  Foliage pilose; fruit pale gray; first glume minute...............**3. S. sanguinalis.**

1. **Syntherisma filiformis** (L.) Nash.

Common in open ground throughout our region, especially to the east. Sept. Southern states, north to Mass. (*Panicum filiforme* L.; *Digitaria filiformis* Koeler.)

The only native species in our region.

2. **Syntherisma ischaemum** (Schreb.) Nash.

A weed in lawns, gardens, and waste ground, less troublesome than *S. sanguinalis*. Aug.–Oct. Eastern U. S. Native of Eur. (*S. linearis* Nash; *Digitaria humifusa* Pers.)

3. **Syntherisma sanguinalis** (L.) Dulac. CRABGRASS.

A common and troublesome weed in lawns, and in cultivated and waste ground. July till frost. Throughout the U. S.; native of Eur. (*Panicum sanguinale* L.; *Digitaria sanguinalis* Scop.)

Plants in cultivated ground, with numerous branches rooting in all directions, suggest a crab.

8. PASPALUM L.

Rachis broadly winged, partly infolding the spikelets; plants subaquatic. 1. **P. dissectum.**
Rachis not winged; plants terrestrial.
Spikelets 2.5 mm. long or more, borne singly in 2 rows.
Sheaths and blades pilose.................................2. **P. longipilum.**
Sheaths and blades glabrous or the sheaths ciliate only or the blades sparsely pilose.
Blades elongate, reaching the base of the panicle or overtopping it; spikelets suborbicular, 3–3.2 mm. long.........................3. **P. circulare.**
Blades shorter, the panicle much exceeding them; spikelets not over 2.8 mm. long, broadly oval...4. **P. laeve.**
Spikelets not over 2 mm. long, borne in pairs, appearing as if in 3 or 4 rows.
Spikelets 1.6 mm. long or less; culms very slender.
Blades glabrous on both surfaces or pubescent above, linear-lanceolate. 5. **P. longepedunculatum.**
Blades densely pilose on both surfaces, linear..................6. **P. setaceum.**
Spikelets about 2 mm. long; culms less slender.
Sheaths and blades densely canescent or velvety; culms stiffly spreading. 7. **P. psammophilum.**
Sheaths ciliate only, the blades densely or sparsely pilose.
Blades linear, 3–5 mm. wide, commonly rather densely pilose. 8. **P. pubescens.**
Blades wider toward the middle, 6–10 mm. wide, usually sparsely pilose. 9. **P. muhlenbergii.**

1. **Paspalum dissectum** L.

Found on the Potomac Flats in 1900; not since found in our region. Autumn. Atlantic Coastal Plain. (*P. membranaceum* Walt.)

2. **Paspalum longipilum** Nash.

Moist open ground; Takoma Park, Glen Sligo, and eastward. Aug.–Oct. Atlantic Coastal Plain.

3. **Paspalum circulare** Nash.

Moist open ground and embankments, especially eastward. Aug. Conn. to N. C. and Tex.

4. **Paspalum laeve** Michx.

Common in open ground and along roadsides. Aug.–Sept. Southern states, north to N. J.

The commoner form has blades pilose above, sometimes also toward the base beneath. (*P. australe* Nash; *P. laeve australe* Hitchc.)

5. **Paspalum longepedunculatum** LeConte.

Open wooded slopes; Somerset and Fourmile Run, probably elsewhere. Sept. Southern states, north to Md.

6. **Paspalum setaceum** Michx.

Gravelly or sandy clay soil; Takoma Park and Fourmile Run, probably elsewhere. July–Sept. Southern states, north to N. J.

7. **Paspalum psammophilum** Nash.

Open sterile ground; found at Brookland in 1894. July. Atlantic Coastal Plain.

8. **Paspalum pubescens** Muhl.

Common in open woods and old fields. Aug.–Sept. Atlantic Coast to the Middle West.

9. **Paspalum muhlenbergii** Nash.

Found in the same habitat and range as the preceding species, rather commoner in our region.

Doubtfully distinct, even varietally.

9. PANICUM L.

Plants annual. Panicles open.
  Spikelets warty. Plants glabrous..............................**13. P. verrucosum.**
  Spikelets smooth.
    Sheaths glabrous; first glume only one-fourth as long as the spikelet, truncate. **1. P. dichotomiflorum.**
    Sheaths hirsute; first glume as much as half the length of the spikelet, pointed. (CAPILLARIA.)
      Panicles drooping; spikelets 4.5–5 mm. long..................**6. P. miliaceum.**
      Panicles erect; spikelets not over 3.5 mm. long.
        Spikelets 3–3.5 mm. long, acuminate; panicles narrow, usually less than half as broad as long, or sometimes spreading at maturity.......**2. P. flexile.**
        Spikelets about 2 mm. long, acutish but not acuminate; panicles as broad as long.
          Panicles more than half the length of the entire plant; culms rather stout, erect or ascending....................................**5. P. capillare.**
          Panicles not more than one-third the length of the entire plant; culms erect or decumbent-spreading.
            Culms stout, soon decumbent-spreading; blades about 1 cm. wide. **3. P. gattingeri.**
            Culms slender, erect, zigzag below; blades not over 6 mm. wide. **4. P. philadelphicum.**
Plants perennial.
  Spikelets short-pediceled, on short branchlets along the main branches of the panicle, pointed. Sheaths keeled. (AGROSTOIDEA.)
    Rootstocks present; culms but little compressed....................**12. P. anceps.**
    Rootstocks wanting; culms strongly compressed, with keeled sheaths.
      Ligule ciliate, 2–3 mm. long; panicle much exceeding the upper leaves. **11. P. longifolium.**
      Ligule erose or lacerate but not ciliate; panicle not much longer than the upper leaves.
        Fruit stipitate; spikelets conspicuously secund; panicle usually purple. **10. P. stipitatum.**
        Fruit not stipitate; spikelets not conspicuously secund; panicle green or slightly tinged with purple.
          Spikelets 1.8–2 mm. long; panicle branches ascending or spreading. **8. P. agrostoides.**
          Spikelets about 2.5 mm. long; panicle branches erect or nearly so. **9. P. condensum.**

Spikelets long-pediceled, in an open panicle.
Rootstocks present; culms stout and erect; no winter rosette of leaves formed.
Spikelets 4–4.5 mm. long (rarely 3.5–5 mm.), beaked; first glume two-thirds the length of the spikelet or more........................**7. P. virgatum.**
Spikelets not over 3.2 mm. long, not beaked; first glume about half the length of the spikelet...................................**7a. P. virgatum cubense.**
Rootstocks wanting; plants usually forming a winter rosette of basal leaves. Vernal phase blooming in the early summer, the culms simple, with open terminal panicles; the autumnal phase much branched, the panicles reduced and more or less included in the sheaths. (Subgenus DICHANTHELIUM.)
Blades elongate, not over 5 mm. wide, 20 times as long as wide. (DEPAUPERATA.) (See *P. bicknellii* and *P. aculeatum.*)
Spikelets about 3.5 mm. long, beaked...................**14. P. depauperatum.**
Spikelets 2–2.7 mm. long, not beaked.
Sheaths pilose..**15. P. linearifolium.**
Sheaths glabrous..**16. P. werneri.**
Blades not elongate, usually not more than 10 times as long as wide.
Spikelets glabrous.
Spikelets about 1.5 mm. long. Nodes bearded; autumnal phase much branched, reclining..................................**19. P. microcarpon.**
Spikelets 2 mm. long or more.
Culms soon prostrate, the autumnal phase vinelike......**26. P. lucidum.**
Culms erect, the autumnal phase sometimes reclining but not vinelike.
Spikelets about 2.5 mm. long, pointed beyond the fruit. **25. P. yadkinense.**
Spikelets 2 mm. long, not pointed beyond the fruit.
Nodes glabrous; autumnal phase erect, branched like a little tree. **23. P. dichotomum.**
Nodes, at least the lowest, bearded; autumnal phase top-heavy, reclining.................................**24. P. barbulatum.**
Spikelets pubescent (sparsely so in *P. scribnerianum*).
Spikelets 3 mm. long or more.
Ligule 3–4 mm. long; blades velvety beneath, firm.....**43. P. ravenelii.**
Ligule obsolete; blades not velvety beneath (except in *P. boscii molle*).
Nodes bearded; spikelets 4–4.5 mm. long.
Blades glabrous or nearly so on both surfaces..........**50. P. boscii.**
Blades velvety beneath.......................**50a. P. boscii molle.**
Nodes not bearded; spikelets mostly less than 4 mm. long.
Blades 1.5–4 cm. wide, cordate-clasping.
Sheaths glabrous; blades minutely ciliate at base. **49. P. latifolium.**
Sheaths, at least the lower, tuberculate-hispid; blades not ciliate at base................................**48. P. clandestinum.**
Blades rarely over 1 cm. wide, not cordate-clasping.
Pubescence ascending; spikelets 3.5–4 mm. long. **42. P. oligosanthes.**
Pubescence spreading; spikelets 3.2–3.3 mm. long
Spikelets obtuse, 3.2–3.3 mm. long......**41. P. scribnerianum.**
Spikelets acute, 3 mm. long.................**45. P. aculeatum.**
Spikelets less than 3 mm. long (see *P. clandestinum*).
Sheaths retrorsely pilose; plants light green, forming soft mats. **17. P. xalapense.**
Sheaths not retrorsely pilose; plants erect, spreading or finally prostrate but not forming soft mats.................................A, AA.

A. Ligule manifest, 2–5 mm. long (1–1.5 mm. long in *P. tsugetorum*).
Sheaths glabrous or the lowest sometimes pubescent.
Panicle narrow, one-fourth to one-third as wide as long.......... **27. P. spretum.**
Panicle open, nearly as wide as long.......................... **28. P. lindheimeri.**
Sheaths pubescent.
Spikelets 2.2–2.4 mm. long.
Pubescence on culms horizontally spreading; autumnal phase freely branching. **33. P. villosissimum.**
Pubescence on culms appressed or ascending; autumnal phase rather sparingly branching.. **34. P. pseudopubescens.**
Spikelets less than 2 mm. long.
Vernal blades glabrous or nearly so on the upper surface.
Ligule 1–1.5 mm. long; culm crisp-puberulent............ **36. P. tsugetorum.**
Ligule 4–5 mm. long; culm papillose-pilose or becoming glabrous. **32. P. tennesseense.**
Vernal blades pubescent on the upper surface.
Spikelets 1.3–1.5 mm. long; vernal blades long-pilose on the upper surface.
Autumnal phase widely decumbent-spreading, forming a mat, the vernal culms soon geniculate-spreading; plants grayish olivaceous. **30. P. albemarlense.**
Autumnal phase erect, not forming a mat; plants yellowish green. **29. P. meridionale.**
Spikelets 1.6–1.8 mm. long; vernal blades appressed-pubescent.
Blades stiff, erect.. **31. P. huachucae.**
Blades lax, spreading...................... **31a. P. huachucae silvicola.**
AA. Ligule obsolete or less than 1 mm. long.
Nodes bearded.
Blades velvety.. **20. P. annulum.**
Blades glabrous, or only the lower pubescent.
Sheaths and upper nodes glabrous.............................. **22. P. clutei.**
Sheaths, at least the lower ones, and all the nodes pubescent. **21. P. mattamuskeetense.**
Nodes not bearded.
Plants densely gray-velvety throughout, a viscid glabrous ring below the nodes. **44. P. scoparium.**
Plants not gray-velvety.
Sheaths, or some of them, pilose or hispid.
Pubescence papillose-hispid......................... **48. P. clandestinum.**
Pubescence ascending-pilose.
Spikelets 2 mm. long....................................... **35. P. addisonii.**
Spikelets 1.3 mm. long...................... **37a. P. columbianum thinium.**
Sheaths glabrous or only puberulent.
Spikelets spheric, not over 1.8 mm. long. Blades with a thin white cartilaginous margin.
Culms spreading; panicle as broad as long........... **38. P. sphaerocarpon.**
Culms erect; panicle two-thirds as broad as long........ **39. P. polyanthes.**
Spikelets not spheric.
Spikelets 2.5 mm. long.
Upper blades elongate, narrowed toward the base..... **18. P. bicknellii.**
Upper blades not elongate, cordate at base.
Culms crisp-puberulent; blades usually less than 1 cm. wide. **46. P. ashei.**
Culms glabrous; blades usually 1.5 cm. wide or more. **47. P. commutatum.**

Spikelets less than 2 mm. long.
  Culms crisp-puberulent. . . . . .37. **P. columbianum.**
  Culms glabrous.
    Nodes glabrous; culms delicate, sparingly branching.
      40. **P. ensifolium.**
    Nodes bearded; culms slender but not delicate, very freely branching.
      19. **P. microcarpon.**

1. **Panicum dichotomiflorum** Michx.

Common in moist ground and embankments; a weed in cultivated soil. Aug.–Sept. Eastern and middle states. (*P. proliferum* of Ward's Flora.)

2. **Panicum flexile** (Gattinger) Scribn.

Moist sandy soil; infrequent in our region. Sept. Eastern and middle states.

3. **Panicum gattingeri** Nash.

Open and waste ground; frequent; a weed in cultivated soil. Sept. Eastern and middle states.

4. **Panicum philadelphicum** Bernh.

Open sandy or argillaceous soil; common. Aug.–Sept. Eastern and middle states.

5. **Panicum capillare** L. WITCH GRASS.

Open ground, fields, and waste places; common. Sept. A weed in cultivated soil. Atlantic Coast to the Rocky Mts.

6. **Panicum miliaceum** L. HOG MILLET. BROOMCORN MILLET.

A weed in waste ground; rare. July–Aug. Escaped from cultivation in the northeastern and middle states; native of Eur.

7. **Panicum virgatum** L.

Open moist ground and open woods; frequent, especially near the Potomac. July–Aug. Atlantic Coast to the Rocky Mts.

7a. **Panicum virgatum cubense** Griseb.

Boggy pine woods; infrequent; College Park and Beltsville. July–Aug. Atlantic Coastal Plain.

8. **Panicum agrostoides** Spreng.

Wet meadows and swales; infrequent. Aug. Eastern U. S.

9. **Panicum condensum** Nash.

Swales near the Potomac below Washington; rare. Sept.–Oct. Atlantic Coastal Plain.

10. **Panicum stipitatum** Nash.

Wet meadows and swales near the Eastern Branch and Potomac; frequent. Sept. Eastern U. S.

11. **Panicum longifolium** Torr.

Moist sandy or gravelly ground in the valley of the Eastern Branch; infrequent. Aug. Atlantic and Gulf states.

12. **Panicum anceps** Michx.

Moist open ground or open woods; common. Aug. Eastern U. S.

13. **Panicum verrucosum** Muhl.

Wet sandy woods or shaded ditches; frequent from Takoma Park eastward. Aug.–Sept. Eastern and southern states and in northern Ind.

14. **Panicum depauperatum** Muhl.

Sterile woods; frequent. Eastern U. S.

15. **Panicum linearifolium** Scribn.

Dry woods along the north side of the Potomac; frequent. Eastern U. S.

16. **Panicum werneri** Scribn.

Pine woods; near Paint Creek. Me. to Mo. and Md.

17. **Panicum xalapense** H. B. K.

Rich alluvial woods or open ground along the Potomac from District Line to Great Falls; frequent. Southern states, north to Md. (*P. laxiflorum* of Britt. & Brown, Illustr. Fl.)

18. **Panicum bicknellii** Nash.

Rocky woods between Chevy Chase, Glen Echo, and Great Falls; near Paint Creek, west of Beltsville; infrequent. Eastern U. S.

Associated with *Kalmia latifolia*, *Panicum ashei*, and *Antennaria*.

19. **Panicum microcarpon** Muhl.

Swampy borders and swales or alluvial stream banks; common, especially eastward. Eastern U. S. (*P. barbulatum* of Britton's Manual.)

Forming great tangled masses with conspicuously bearded nodes and small divaricate blades on slender scorpioid branchlets.

20. **Panicum annulum** Ashe.

Rather rich rocky woods, between Chevy Chase, Cleveland Park, and Great Falls; infrequent. Atlantic states, above the Coastal Plain, and in Mo. and Miss.

21. **Panicum mattamuskeetense** Ashe.

Magnolia bogs; Beltsville and east of Hyattsville; rare. Atlantic Coastal Plain, Long Isl. to N. C.

22. **Panicum clutei** Nash.

Boggy swale, Kenilworth; rare. Atlantic Coastal Plain, Mass. to N. C.

Intergrades with *P. mattamuskeetense;* possibly only a form of that.

23. **Panicum dichotomum** L.

Dry and sterile woods; common. Eastern U. S.

24. **Panicum barbulatum** Michx.

Sterile and rocky woods; commoner than *P. dichotomum*. Eastern U. S.

25. **Panicum yadkinense** Ashe.

Moist thickets and brushy places along streamlets; frequent. Southern Atlantic states, north to Pa.

26. **Panicum lucidum** Ashe.

Magnolia bogs and boggy spots in pine woods; Takoma Park and eastward; found in 1898 at Fort Myer. Southern states, north to N. Y.

Forming large clumps, the vinelike culms with spreading glossy blades prostrate among sphagnum and underbrush.

27. **Panicum spretum** Schult.

Wet sandy open ground; College Park; rare. Atlantic Coastal Plain, Me. to Tex.

28. **Panicum lindheimeri** Nash.

Wet sandy meadows or low open woods; common. Atlantic Coast to the Great Plains.

29. **Panicum meridionale** Ashe.

Sandy or rocky woods and copses; frequent. R. I. to Ala.

30. **Panicum albemarlense** Ashe.

Low sandy wood borders and clearings; frequent southeastward below the fall line. Eastern U. S.

31. **Panicum huachucae** Ashe.

Open grassy ground; infrequent. Mississippi Valley and northeastward.

31a. **Panicum huachucae silvicola** Hitchc. & Chase.

Open woods and clearings; common. Eastern U. S.

32. **Panicum tennesseense** Ashe.

Wood borders and roadsides, usually in rather moist ground; common, especially in the vicinity of the Potomac above Washington. Atlantic Coast to the Rocky Mts.

33. **Panicum villosissimum** Nash.

Dry or sandy open woods and clearings; common. Eastern U. S.

34. **Panicum pseudopubescens** Nash.

Dry sandy open woods; found at Kenilworth in 1899. Southern Atlantic states to Conn. (*P. ovale* of Gray's Manual.)

35. Panicum addisonii Nash.

Dry sandy pine woods near the junction of Bladensburg Road and Carters Lane, east of Hyattsville. Coastal Plain, Mass. to S. C.

A characteristic species of the sand-barrens of the Atlantic Coast; in our region associated with sand-barren species.

36. Panicum tsugetorum Nash.

Sandy woods; below the fall line; infrequent. Northeastern U. S., south to Va.

37. Panicum columbianum Scribn.

Rocky and sandy woods, especially eastward; frequent. Northeastern U. S., south to Va.

37a. Panicum columbianum thinium Hitchc. & Chase.

Dry sands of the flood plain in a loop of the Eastern Branch, east of Hyattsville. Mass. to Va.

A characteristic plant of the sand barrens of the Atlantic Coast.

38. Panicum sphaerocarpon Ell.

Open ground everywhere, especially in sandy soil. Eastern U. S.

39. Panicum polyanthes Schult.

Moist ground, wood borders, and clearings; frequent, especially below the fall line. Southern Atlantic states to N. J.

40. Panicum ensifolium Baldw.

Open spot in white sand magnolia bog, Powdermill Swamp. Atlantic Coastal Plain, north to N. J.

41. Panicum scribnerianum Nash.

Sandy open ground; frequent. Me. to Md. and westward. (*P. pauciflorum* of Ward's Flora.)

42. Panicum oligosanthes Schult.

Sandy, usually moist, open woods; below the fall line; infrequent. Southern states, north to N. J.

43. Panicum ravenelii Scribn. & Merr.

Sandy or rocky open woods; frequent. Southern states, north to Md.

44. Panicum scoparium Lam.

Wet open ground, wood borders, and along streams; below the fall line; common. Southern states, north to Mass. (*P. viscidum* Ell.)

45. Panicum aculeatum Hitchc. & Chase.

Boggy wood borders and thickets; Takoma Park (type locality), Brightwood, and east of Hyattsville. Coastal Plain from Long Isl. to N. C.

A rare species.

46. Panicum ashei Pearson.

Sterile or rocky oak and pine woods; common. Eastern U. S.

A characteristic plant of laurel and blueberry hillsides.

47. Panicum commutatum Schult.

In less sterile woods than those occupied by *P. ashei*, the two occasionally growing together; common. Eastern U. S.

48. Panicum clandestinum L.

Moist open ground and wood borders and along streamlets; common. Eastern U. S.

The ripe grains remaining in the crowded sheaths well into the winter afford food for birds.

49. Panicum latifolium L.

Rich rocky woods along the Potomac above Washington; frequent. Eastern U. S. (*P. macrocarpon* LeConte.)

50. Panicum boscii Poir.

Wooded slopes everywhere; common. Eastern U. S. (*P. porterianum* Nash.)

50a. Panicum boscii molle (Vasey) Hitchc. & Chase.

Same habitat as the species; commoner. Eastern U. S. (*P. latifolium molle* Vasey.)

10. ECHINOCHLOA Beauv.

Sheaths glabrous; awns rarely over 3 cm. long; panicle rarely over 20 cm. long, not drooping......1. **E. crusgalli**
Sheaths hirsute; awns 3–5 cm. long; panicle drooping, commonly 30–40 cm. long. 2. **E. walteri.**

1. **Echinochloa crusgalli** (L.) Beauv. BARNYARD GRASS. COCKSPUR.

Moist low open ground; common; an introduced weed. Aug.–Sept. Throughout the U. S., except in the northern tier of states; native of Eur. (*Panicum crusgalli* L.)

2. **Echinochloa walteri** (Pursh) Nash.

In swales; Potomac flats and southward; infrequent. Aug.–Sept. Atlantic Coastal Plain, and about the head of Lake Michigan. (*Panicum walteri* Pursh; *P. crusgalli hispidum* A. Gray.)

11. CHAETOCHLOA Scribn.

Plants perennial by short knotty rootstocks......1. **C. geniculata.**
Plants annual.
  Bristles downwardly barbed......3. **C. verticillata.**
  Bristles upwardly barbed.
    Bristles 5 or more in each cluster; spikes yellowish......2. **C. lutescens.**
    Bristles 1–3 in each cluster; spikes green or purplish.
      Spikelet articulate below the glumes, the complete spikelet shelling out, leaving a cuplike receptacle......4. **C. viridis.**
      Spikelet articulate above the glumes, only the fruit shelling out, leaving the persistent glumes and sterile lemma......5. **C. italica.**

1. **Chaetochloa geniculata** (Lam.) Millsp. & Chase.

Moist meadows and along ditches; frequent. Sept. Eastern U. S. (*Setaria imberbis* Roem. & Schult.; *C. imberbis* Scribn.)

2. **Chaetochloa lutescens** (Weigel) Stuntz. YELLOW FOXTAIL.

Open waste and cultivated ground everywhere. July–Sept. Common east of the Rocky Mts., rare on the Pacific Coast; introduced from Eur.

A troublesome weed in lawns and gardens. In mowed lawns the culms become prostrate and fruit when 10-20 cm. long. (*Setaria glauca* and *Chaetochloa glauca* of authors.)

3. **Chaetochloa verticillata** (L.) Scribn.

Open waste ground; uncommon. July–Aug. Eastern and middle states. Introduced from Eur. (*Setaria verticillata* Beauv.)

4. **Chaetochloa viridis** (L.) Scribn. GREEN FOXTAIL.

Open waste ground and river flats; frequent. June–Aug. Throughout the U. S.; introduced from Eur. (*Setaria viridis* Beauv.)

Not an aggressive weed in this region.

5. **Chaetochloa italica** (L.) Scribn. MILLET.

Dumping grounds and along railroads. July. Throughout the U. S., except in the mountains, as an escape from cultivation; native of Eur. (*Setaria italica* Roem. & Schult.)

Plants growing spontaneously vary in size from 30 cm. or less to 1.5 meters tall.

12. CENCHRUS L.

1. **Cenchrus pauciflorus** Benth. SANDBUR.

Sandy ground, along railroads and trolley tracks to the eastward; common in the vicinity of Bennings. July–Sept. Throughout the U. S. (*C. tribuloides* of Ward's Flora; *C. carolinianus* of recent manuals, not Walt.)

13. ZIZANIA L.

1. Zizania palustris L. WILD RICE.

In shallow water, covering extensive areas in the marshes along the Eastern Branch, bordering Analostan Island, and elsewhere along the Potomac; rarely growing in pockets of wet soil among rocks on islands. July–Sept. Eastern and middle states. (*Z. aquatica* of Ward's Flora.)

The plants are annuals, though the large size and pure stands give the impression of a perennial. Also called Indian rice and water rice. Plate 13 shows this as it grows in Eastern Branch in summer.

14. HOMALOCENCHRUS Mieg.

Spikelets 2.5–3 mm. long; branches single, nearly straight, spikelet-bearing toward the end........1. **H. virginicus.**
Spikelets 4–5 mm. long; lower branches clustered, spikelet-bearing from below the middle........2. **H. oryzoides.**

1. Homalocenchrus virginicus (Willd.) Britton. WHITE GRASS.

Swampy woods and copses. Aug.–Sept. Eastern U. S. (*Leersia virginica* Willd.)

2. Homalocenchrus oryzoides (L.) Poll. RICE CUT-GRASS.

Wet open ground, along streams, and in railroad ditches; common. Sept. Throughout the U. S.; also in Eur. and Asia. (*Leersia oryzoides* L.)

15. PHALARIS L.

Plants annual; heads ovate; glumes wing-keeled........1. **P. canariensis.**
Plants perennial; panicle 6–15 cm. long, open during anthesis; glumes not wing-keeled........2. **P. arundinacea.**

1. Phalaris canariensis L. CANARY GRASS.

Waste ground; an infrequent escape from cultivation. May–June. Atlantic and Pacific Coast states; introduced from Eur.

2. Phalaris arundinacea L. REED CANARY GRASS.

Wet ground or in shallow water; frequent. June. Northern states, south to Md.; also in Eur. and Asia.

In past years popular as an ornamental, especially the form called ribbon grass, with blades striped with white (var. *picta* L.).

16. ANTHOXANTHUM L.

1. Anthoxanthum odoratum L. SWEET VERNAL GRASS.

Meadows, lawns, old fields, and open woods; common everywhere. May. Atlantic and Pacific Coast states; naturalized from Eur.

17. ARISTIDA L. NEEDLE GRASS.

Plants perennial, 30–60 cm. tall; spikelets crowded on the short erect branches of a narrow panicle........1. **A. purpurascens.**
Plants annual; spikelets not crowded, the panicle nearly simple.
  Middle awn coiled at base at maturity........2. **A. dichotoma.**
  Middle awn not coiled.
    Lateral awns 2–6 mm. long, much shorter than the middle one.....3. **A. gracilis.**
    Lateral awns 3.5–7 cm. long, about as long as the middle one.....4. **A. oligantha.**

1. Aristida purpurascens Poir.

Sterile woods and rocky banks of rivers; frequent. Eastern U. S.

All the species of *Aristida* flower in late summer and autumn.

2. **Aristida dichotoma** Michx. POVERTY GRASS.
Sterile open ground; frequent. Eastern U. S.

3. **Aristida gracilis** Ell.
Sterile open ground; infrequent. Eastern U. S.

4. **Aristida oligantha** Michx.
Fields and open ground; frequent. Southern states, north to N. J.

18. STIPA L. SPEAR GRASS.

1. **Stipa avenacea** L.
Dry or moist woods; frequent. May–June. Eastern U. S.
Ripe fruit brown, the sharp point brown-bearded.

19. MUHLENBERGIA Schreb.

Panicle diffuse, the pedicels capillary............................1. **M. capillaris.**
Panicle contracted, usually narrow.
Culms delicate, decumbent at base, without rootstocks; glumes not over one-fourth as long as the lemma.
First glume obsolete; second glume minute....................2. **M. schreberi.**
First glume about one-fifth, the second about one-fourth as long as the lemma. 2a. **M. schreberi palustris.**
Culms erect, from scaly rootstocks; glumes at least half as long as the lemma.
Blades ascending or erect; glumes narrow, acuminate, about as long as the body of the lemma.
Culms smooth below the nodes; lemma acuminate...........3. **M. mexicana.**
Culms pubescent below the nodes; lemma usually long-awned. 4. **M. umbrosa.**
Blades divaricate; glumes broadly ovate, one-half to three-fourths as long as the floret.
Lemmas awned..5. **M. tenuiflora.**
Lemmas awnless..6. **M. sobolifera.**

1. **Muhlenbergia capillaris** (Lam.) Trin. HAIR GRASS.
Rocky woods; infrequent. Eastern U. S.
All our species of *Muhlenbergia* are late-flowering.

2. **Muhlenbergia schreberi** J. F. Gmel.
Open ground; common. Aug.–Sept. Eastern U. S. (*M. diffusa* Willd.)
This and the following species are sometimes called nimble Will and wire grass, because of the slender tough culms.

2a. **Muhlenbergia schreberi palustris** Scribn.
Open moist grassland; vicinity of Brightwood, the type locality. Also in Ill.

3. **Muhlenbergia mexicana** (L.) Trin.
Moist low woods and open ground; common. Northern states, south to N. C.
The scaly rootstocks of this and the following three species are conspicuous.

4. **Muhlenbergia umbrosa** Scribn.
Moist open ground and thickets; infrequent. Northern states, south to N. C. (*M. sylvatica* Torr.)

5. **Muhlenbergia tenuiflora** (Willd.) B. S. P.
Moist rocky soil and moist woods; infrequent. Eastern U. S. (*M. willdenovii* Trin.)

6. **Muhlenbergia sobolifera** (Muhl.) Trin.
Rocky woods; infrequent. Northern states, south to Va.

20. BRACHYELYTRUM Beauv.

1. **Brachyelytrum erectum** (Beauv.) Schreb.
Rocky or moist woods; infrequent. July–Aug. Northern states, south to Ga. (*B. aristatum* Beauv.)

21. PHLEUM L.

1. Phleum pratense L. Timothy.

Meadows, pastures, and open ground. June-July. Cultivated as a meadow grass and naturalized throughout the cooler and moist parts of the U. S.; native of Eur.

22. ALOPECURUS L.

Spike cylindric; glumes distinctly ciliate on the keels............1. **A. geniculatus.**
Spike tapering above and below; glumes scarcely ciliate on the keels..2. **A. agrestis.**

1. Alopecurus geniculatus L.

Banks of ditches and streams; rare. May-June. Widely distributed in the U. S.; also in Eur. and Asia. (Including *A. geniculatus aristulatus* of Ward's Flora.)

2. Alopecurus agrestis L.

Old fields and waste places; rare. A European grass, occasionally found introduced in waste places.

23. SPOROBOLUS R. Br. Drop-seed grass.

Plants perennial; palea acuminate, longer than the lemma........1. **S. clandestinus.**
Plants annual; palea not longer than the lemma.
  Spikelets 4 mm. long; lemma pubescent....................2. **S. vaginaeflorus.**
  Spikelets 2.5–3 mm. long; lemma glabrous......................3. **S. neglectus.**

1. Sporobolus clandestinus (Spreng.) Hitchc.

Sandy soil; Great Falls to High Island; infrequent. Eastern U. S. (*Vilfa aspera* of Ward's Flora.)

All our species of *Sporobolus* are fall-flowering.

2. Sporobolus vaginaeflorus (Torr.) Wood.

Waste ground or sandy soil; frequent. Eastern U. S.

3. Sporobolus neglectus Nash.

Waste ground or sandy soil; frequent. Northern states, south to Va.

24. CINNA L.

1. Cinna arundinacea L. Wood reed-grass.

Moist woods; frequent. Aug.–Sept. Northern states, south to N. C.

25. AGROSTIS L. Bent grass.

Palea present. Panicle many-flowered, rather compact; plants usually tall.
  Ligule of the culm leaves long, mostly 3–5 mm.; panicle large and many-flowered, usually closing after flowering; culms 50–100 cm. tall..........1. **A. palustris.**
  Ligule short; panicle small, rather few-flowered, open and spreading, remaining open after flowering; culms usually less than 40 cm. tall.......2. **A. capillaris.**
Palea wanting.
  Panicle diffuse, the branches long and capillary, branching toward the end. 3. **A. hiemalis.**
  Panicle spreading but not diffuse, the branches branching below the middle. 4. **A. perennans.**

1. Agrostis palustris Huds. Redtop.

Meadows, pastures, and open ground. June-July. Cultivated throughout the northern states as a meadow and pasture grass, and commonly escaped into open moist ground; native of Eur. (*A. alba* of Ward's Flora.)

2. Agrostis capillaris L. Rhode Island bent.

Open grassland; frequent. Cultivated as a lawn grass and escaped in the northeastern states; native of Eur. (*A. alba vulgaris* Thurb.; *A. vulgaris* With.)

3. **Agrostis hiemalis** (Walt.) B. S. P.

Open, dry or moist ground. June–July. Common throughout the U. S. (*A. scabra* Willd.)

A low delicate grass, the mature, very diffuse panicle breaking away and rolling before the wind as a tumbleweed. Sometimes called tickle-grass.

4. **Agrostis perennans** (Walt.) Tuckerm.

Dry or moist woods; common. Aug.–Sept. Northern states, south to N. C.

The ordinary form is erect and rather stiff. A form found in moist shady places has decumbent stems and delicate, divaricately branched panicles.

26. CALAMAGROSTIS Adans. REED-GRASS.

Spikelets 3–3.5 mm. long; rudiment hairy throughout; panicle rather open. **1. C. canadensis.**

Spikelets 6–7 mm. long; rudiment hairy at the tip; panicle contracted. **2. C. cinnoides.**

1. **Calamagrostis canadensis** (Michx.) Beauv.

Swales and moist woods; rare; Bladensburg; southwest of Rockville, near Cabin John road. June–July. Northern U. S., south to Md., and in the mountains to N. C.

2. **Calamagrostis cinnoides** (Muhl.) Barton.

Boggy woods, especially magnolia bogs below the fall line. Aug. Northern states, south to Ga. (*C. nuttalliana* Steud.)

27. NOTHOLCUS Nash.

1. **Notholcus lanatus** (L.) Nash. VELVET GRASS.

Meadows and waste places; infrequent. June. Naturalized from Eur. in the eastern states and on the Pacific Slope. (*Holcus lanatus* L.)

28. AIRA L.

1. **Aira caryophyllea** L.

Dry open ground; infrequent. May. Northern states and Pacific Slope; naturalized from Eur.

29. DESCHAMPSIA Beauv.

1. **Deschampsia flexuosa** (L.) Trin.

Dry woods; infrequent. May–June. Northern states, south to N. C.; also in Eur. (*Aira flexuosa* L.)

30. TRISETUM Pers.

1. **Trisetum pennsylvanicum** (L.) B. S. P.

Bogs; rare. Eastern U. S. (*T. palustre* Torr.)

31. SPHENOPHOLIS Scribn.

Panicle narrow, densely flowered; glumes equal in length, about 2 mm. long, the second much broadened above, 1 mm. wide......................**1. S. obtusata.**

Panicle lax, the branches more or less spreading; glumes unequal in length, the second longer, widened above, 0.5–0.75 mm. wide.

  Glumes subequal, the second broadly obovate, obtuse; florets obtuse, the second scabrous..**2. S. nitida.**

  Glumes unequal, the first shorter than the narrowly obovate second one; florets mostly acute, glabrous......................................**3. S. pallens.**

1. **Sphenopholis obtusata** (Michx.) Scribn.

Rocky woods; rare; Great Falls, on the Virginia side; also collected by Ward and by Seaman, the localities not recorded. June. Conn. to Fla. and westward.

2. **Sphenopholis nitida** (Spreng.) Scribn.
Shaded hillsides; infrequent. May. Northeastern states, south to Ga.

3. **Sphenopholis pallens** (Spreng.) Scribn.
Rocky woods; frequent. May–June. Northern states, south to N. C. (*Eatonia pennsylvanica* A. Gray.)

32. AVENA L.

1. **Avena sativa** L. OATS.
Cultivated as a cereal and escaped, especially where the grain is fed or handled. Native of Eur. and Asia.

33. ARRHENATHERUM Beauv.

1. **Arrhenatherum elatius** (L.) Beauv. TALL OAT GRASS.
Meadows and waste places; infrequent. June–July. Cultivated as a meadow grass and naturalized in waste places and grassland in the northern states and southward to Tenn.; native of Eur.

34. DANTHONIA DC.

Teeth of lemma acute or acuminate.................................**1. D. spicata.**
Teeth of lemma bearing awns as long as the spiral section of the central awn. **2. D. compressa.**

1. **Danthonia spicata** (L.) DC.
Dry open woods and sterile hills; common. June. Northern states, south to N. C.
The species of *Danthonia* produce cleistogamous spikelets at the base of the lower sheaths of the culm.

2. **Danthonia compressa** Austin.
Dry woods; infrequent; Great Falls; Takoma Park. June. Me. to N. C.
Plant usually taller and panicle more open than in the preceding.

35. CAPRIOLA Adans.

1. **Capriola dactylon** (L.) Kuntze. BERMUDA GRASS.
Pastures and open dry ground; common. Summer. Cultivated as a pasture grass in the southern states and thoroughly naturalized as far north as Long Isl.; native of Eur. (*Cynodon dactylon* L.)

36. SPARTINA Schreb.

1. **Spartina michauxiana** Hitchc. CORD-GRASS.
Marshes and river banks; infrequent. Aug. Northern states, south to Va. (*S. cynosuroides* of Ward's Flora.)

37. GYMNOPOGON Beauv.

1. **Gymnopogon ambiguus** (Michx.) B. S. P.
Sandy open woods; infrequent; east of the fall line. July–Sept. Southern states, north to N. J. (*G. racemosus* Beauv.)

38. ELEUSINE Gaertn.

1. **Eleusine indica** (L.) Gaertn. GOOSE GRASS.
A weed in open dry ground, especially in yards and along paths; common. Aug.–Sept. Eastern U. S.; naturalized from the Old World.

39. LEPTOCHLOA Beauv.

1. **Leptochloa fascicularis** (Lam.) A. Gray.
Wet soil; rare; Alexandria (*Steele*). Southern states, north to Mass. (*Diplachne fascicularis* Beauv.)

40. PHRAGMITES Trin.

1. **Phragmites communis Trin.** REED.

Marshes; Eastern Branch below the steel plant. Aug.–Sept. Cosmopolitan. (*P. phragmites* Karst.)

41. TRIDENS Roem. & Schult.

1. **Tridens flavus** (L.) Hitchc. PURPLE TOP.

Open woods and dry open grounds; common. Aug.–Sept. Eastern U. S. (*Tricuspis seslerioides* Torr.)

The upper part of the culm and the branches of the panicle become sticky at maturity and retain dust and small particles.

42. ERAGROSTIS Beauv.

- Plants perennial; panicle diffuse, usually purple..................**1. E. pectinacea.**
- Plants annual; panicle open or contracted but not diffuse (except in *E. capillaris*).
  - Culms creeping; plants dioecious or polygamous..................**2. E. hypnoides.**
  - Culms erect or spreading, not creeping; flowers perfect.
    - Spikelets 2–5-flowered.
      - Plants erect, branched from the base; panicle diffuse, open, pale or green; pedicels mostly over 5 mm. long........................**3. E. capillaris.**
      - Plants decumbent or spreading, branched above the base; panicle oblong, the branchlets rather crowded, usually purple; pedicels usually less than 5 mm. long..**4. E. frankii.**
    - Spikelets 5–many-flowered.
      - Lemmas glandular on the keel; spikelets about 3 mm. wide; panicle somewhat contracted..**5. E. cilianensis.**
      - Lemmas not glandular on the keel; spikelets less than 3 mm. wide; panicle more open.
        - Spikelets about 1 mm. wide; panicle branches pilose in the axils. **6. E. pilosa.**
        - Spikelets 1.5–2 mm. wide; panicle branches usually not pilose in the axils.
          - Plant not glandular; spikelets about 1.5 mm. wide, the pedicels appressed along the main branches of the open panicles......**7. E. caroliniana.**
          - Plant glandular on the margins of the blades and sometimes on other portions; spikelets about 2 mm. wide, on spreading pedicels; panicle rather compact.....................................**8. E. minor.**

1. **Eragrostis pectinacea** (Michx.) Nees.

Sandy fields; frequent. Late summer. Eastern U. S.

At maturity the panicle breaks away as a tumbleweed.

2. **Eragrostis hypnoides** (Lam.) B. S. P.

Sandy banks of streams, especially parts exposed at low water; frequent along the Potomac and other larger streams. Aug.–Sept. Eastern U. S. (*E. reptans* Nees.)

3. **Eragrostis capillaris** (L.) Nees.

Open woods; infrequent. Aug.–Sept. Eastern U. S.

The plant has a pleasant lemon scent.

4. **Eragrostis frankii** (Fisch. Mey. & Lall.) Steud.

Moist open soil; infrequent; Glen Echo; Cabin John. Eastern U. S.

5. **Eragrostis cilianensis** (All.) Link. STINK GRASS.

A common weed in open ground and waste places. Common through the warmer parts of the U. S.; naturalized from Eur. (*E. major* Host; *E. megastachya* Link; *E. poaeoides megastachya* A. Gray; *E. poaeoides* of Ward's Flora.)

The plants when fresh exude a disagreeable odor, this probably originating in the glands along the keels of the lemmas.

6. **Eragrostis pilosa** (L.) Beauv.

Moist places; infrequent. Eastern states; introduced from Eur.

7. **Eragrostis caroliniana** (Spreng.) Scribn.

A common weed in open moist ground. Throughout the eastern and southern U. S. (*E. purshii* Schrad.)

8. **Eragrostis minor** Host.

Open waste ground; rare; Beltsville; Anacostia. Late summer. Occasional at scattered localities throughout the U. S.; introduced from Eur. (*E. eragrostis* Karst.)

43. MELICA L.

1. **Melica mutica** Walt.

Rocky woods; frequent above the fall line. Southern states, north to Pa.

44. UNIOLA L.

Panicle contracted, slender; spikelets 5–7 mm. long, narrow..............**1. U. laxa.**

Panicle open, the branches drooping; spikelets 1.5–3 cm. long, broad and very flat. **2. U. latifolia.**

1. **Uniola laxa** (L.) B. S. P.

Moist woods; east of the fall line; infrequent. Summer. Southern states, northward to Long Isl. (*U. gracilis* Michx.)

2. **Uniola latifolia** Michx.

Rich woods; above the fall line. Summer. Southern states, north to Pa.

A handsome grass, the drooping panicles of large, very flat spikelets being very striking.

45. DACTYLIS L.

1. **Dactylis glomerata** L. ORCHARD GRASS.

Cultivated as a meadow grass; frequently established in grassland and along roadsides. May. Native of Eur.

46. POA L. BLUEGRASS.

Plants annual.
  Florets not cottony at base; intermediate nerves of lemma distinct....**1. P. annua.**
  Florets with cottony hairs at base; intermediate nerves indistinct.**2. P. chapmaniana.**
Plants perennial.
  Creeping rootstocks present.
    Culms distinctly flattened; plants not tufted; panicles contracted. **3. P. compressa.**
    Culms terete or obscurely flattened; plants tufted; panicles open.
      Lower branches of the panicle usually in twos; basal leaves usually as long as the culm..**4. P. cuspidata.**
      Lower branches of the panicle usually in fives; basal leaves shorter than the culm..**5. P. pratensis.**
  Creeping rootstocks wanting.
    Lemma not cobwebby at base, conspicuously scarious at the rounded apex. **6. P. autumnalis.**
    Lemma cobwebby at base.
      Sheaths upwardly scabrous; marginal nerves of the lemma glabrous. **7. P. trivialis.**
      Sheaths glabrous; marginal nerves of the lemma pubescent.
        Intermediate nerves of the lemma faint; branches of the panicle ascending or spreading; lemma usually purple-tinged..............**8. P. palustris.**
        Intermediate nerves of the lemma prominent; branches of the panicle finally reflexed; lemma green..............................**9. P. sylvestris.**

1. **Poa annua** L.

A common weed in lawns and waste places. Flowering in early spring or even in warm weather during the winter. Common throughout the warmer parts of the U. S., and in the Old World.

2. **Poa chapmaniana** Scribn.

Arlington Farm (*Wheeler*). Open ground, southern states.

3. **Poa compressa** L. CANADA BLUEGRASS.

Grassland and waste places, especially in sterile soil; a weed in gardens. June. Introduced from Eur. and now distributed throughout the U. S. (Including *P. compressa gracilis* of Ward's Flora.)

4. **Poa cuspidata** Nutt.

Rocky woods; infrequent; mostly above the fall line. Apr. N. Y. to Ga. and Ill. (*P. brachyphylla* Schult.; *P. brevifolia* Muhl.)

Except the introduced *P. annua* this is the earliest of all our grasses to bloom.

5. **Poa pratensis** L. KENTUCKY BLUEGRASS.

Common in grassland. May. Cultivated as a lawn and pasture grass in the cooler parts of the U. S. and well established; native of Eur.

6. **Poa autumnalis** Muhl.

Low woods; frequent. May. Southern states, north to Pa. (*P. flexuosa* Muhl.)

7. **Poa trivialis** L. ROUGH-STALKED MEADOW GRASS.

Moist places, ditches, and river banks; infrequent; along the Potomac above Georgetown. June. Introduced from Eur.

8. **Poa palustris** L.

Moist meadows; rare. July. Southern states, north to Pa.; also in Eur. and Asia. (*P. triflora* Gilib.)

9. **Poa sylvestris** A. Gray.

Rocky woods; frequent. May. Eastern U. S.

47. PANICULARIA Fabr.

Spikelets terete, 1.5–2 cm. long..............................1. **P. septentrionalis.**
Spikelets ovate or oblong, usually not over 7 mm. long.
  Panicle contracted, oblong....................................2. **P. obtusa.**
  Panicle open, lax.
    Spikelets 3–4 mm. wide; lemmas obscurely nerved.
      Lemmas about 2.5 mm. long; spikelets usually not over 5-flowered; middle nodes of panicle with 3–5 primary branches; panicle 3–5 times branched. 3. **P. laxa.**
      Lemmas a little over 3 mm. long; spikelets usually more than 5-flowered; middle nodes of panicle with 1–3 primary branches; panicle 2–3 times branched....................................4. **P. canadensis.**
    Spikelets not over 2.5 mm. wide; lemmas prominently nerved.
      Glumes short and rounded, the lower about 1 mm. long; lemmas about 2 mm. long....................................5. **P. nervata.**
      Glumes oblong, the lower 1.5–2 mm. long; lemmas about 3 mm. long. 6. **P. pallida.**

1. **Panicularia septentrionalis** (Hitchc.) Bicknell.

Marshes and river banks; infrequent; Bladensburg; Broadwater. June. Northern states, south to Va. (*Glyceria septentrionalis* Hitchc.; *G. fluitans* of Ward's Flora.)

2. **Panicularia obtusa** (Muhl.) Kuntze.

Swales and river banks; rare; Oxon Run (*Steele*). Aug. Near the coast, N. Eng. and southward. (*Glyceria obtusa* Trin.)

3. **Panicularia laxa** Scribn.

Swales; rare; Terra Cotta Swamp (*Ward*); Suitland. June. Me. to Md. (*Glyceria laxa* Scribn.; *G. aquatica* of Ward's Flora.)

4. **Panicularia canadensis** (Michx.) Kuntze. RATTLESNAKE GRASS.
Swales below the fall line; infrequent. Summer. Northern states, south to Md. (*Glyceria canadensis* Trin.)

5. **Panicularia nervàta** (Willd.) Kuntze.
Swales and wet places; frequent. May–June. Throughout the U. S. (*Glyceria nervata* Trin.)

6. **Panicularia pallida** (Torr.) Kuntze.
Swales and stream borders; rare; Bladensburg (*Steele*). June. Northern states, south to Va. (*Glyceria pallida* Trin.)

48. FESTUCA L. FESCUE GRASS.

Plants annual.
Glumes somewhat unequal, the lower 3 mm. long; spikelets 5–13-flowered; lemma without scarious margin; awn usually not longer than the lemma. 1. **F. octoflora.**
Glumes very unequal, the lower 1.5–2 mm. long; spikelets 1–5-flowered; lemma scarious-margined; awn about twice as long as the lemma.........2. **F. myuros.**
Plants perennial.
Blades involute; panicle short and contracted.
Culms erect, pale at base...3. **F. ovina.**
Culms decumbent and usually purplish at base.......................4. **F. rubra.**
Blades flat; panicle long and narrow, or open with spreading branches.
Lemmas 5–7 mm. long; panicle narrow, with short erect branches..5. **F. elatior.**
Lemmas about 4 mm. long; panicle very loose, with long spreading or drooping branches...6. **F. obtusa.**

1. **Festuca octoflora** Walt.
Open or sterile ground; common. May–June. Throughout the U. S. (*F. tenella* Willd.)

2. **Festuca myuros** L.
Open ground; frequent. June. Eastern states; naturalized from Eur.

3. **Festuca ovina** L. SHEEP FESCUE.
Pastures and grassland; infrequent. June. Introduced from Eur.; occasionally cultivated as a pasture grass.

4. **Festuca rubra** L. RED FESCUE.
Sometimes cultivated in grass mixtures; occasionally escaped. June. Native of Eur.

5. **Festuca elatior** L. MEADOW FESCUE.
Grassland and open ground; frequent. June. Cultivated as a meadow grass; introduced from Eur.; well established in many places.

6. **Festuca obtusa** Spreng.
Rocky or rich woods; frequent above the fall line. May–June. Eastern states. (*F. nutans* Willd.)

49. BROMUS L. BROME GRASS.

Spikelets much flattened, the lemmas keeled, the awn not more than 2 mm. long. 1. **B. unioloides.**
Spikelets terete or slightly flattened, the lemmas not keeled or keeled only toward the apex, the awn conspicuous (except in *B. inermis*).
Plants perennial.
Creeping rootstocks present; lemma glabrous, awnless or mucronate. 2. **B. inermis.**
Creeping rootstocks wanting; lemma pubescent, awned.
Sheaths usually not overlapping, rather loosely pilose.........3. **B. purgans.**
Sheaths overlapping, densely soft-pilose..............3a. **B. purgans incanus.**

Plants annual.
Lemmas narrow, gradually acuminate.
Second glume usually less than 1 cm. long; pedicels capillary, flexuous. **4. B. tectorum.**
Second glume more than 1 cm. long; pedicels not capillary and flexuous.
Awn about 2 cm. long; first glume about 8 mm. long.......... **5. B. sterilis.**
Awn 3–5 cm. long; first glume about 15 mm. long............ **9. B. villosus.**
Lemmas broad, abruptly narrowed above, glabrous.
Sheaths glabrous.................................... **6. B. secalinus.**
Sheaths pilose.
Panicle rather dense................................ **8. B. racemosus.**
Panicle open.
Lemma smooth, the awn straight...................... **7. B. commutatus.**
Lemma scabrous, the awn divergent................... **10. B. japonicus.**

1. **Bromus unioloides** (Willd.) H. B. K. RESCUE GRASS.
Occasionally escaped from cultivation in the vicinity of Arlington Farm. Cultivated in the southern states as a forage grass. Originally from S. Amer.

2. **Bromus inermis** Leyss. AWNLESS BROME GRASS.
Occasionally escaped from the experimental plots or propagating grounds. Cultivated in the northwestern states as a forage grass. Originally from Eur.

3. **Bromus purgans** L.
Rich or rocky woods; frequent. June–July. Eastern U. S. (*B. ciliatus purgans* A. Gray; *B. ciliatus* of Ward's Flora.)

3a. **Bromus purgans incanus** Shear.
Rocky woods along the Potomac; infrequent. Aug. Pa. to Va. and westward.

4. **Bromus tectorum** L.
A weed in waste ground; infrequent. June. Introduced from Eur.

5. **Bromus sterilis** L.
Waste places; rare; Old Observatory (*Steele*); Holmead (*Ward*); Uniontown (*Ward*). June. Introduced from Eur.

6. **Bromus secalinus** L. CHESS.
Fields and waste ground; frequent. June. Introduced from Eur.
Also called cheat.

7. **Bromus commutatus** Schrad.
Waste places; frequent. June. Introduced from Eur.

8. **Bromus racemosus** L.
Waste places; infrequent. June. Introduced from Eur. (*B. mollis* of Ward's Flora.)

9. **Bromus villosus** Forsk.
Waste places; becoming frequent from College Park to Beltsville. June. Introduced from Eur.

10. **Bromus japonicus** Thunb.
Waste places; near Suitland. July. Introduced from Eur.

50. LOLIUM L. RYE GRASS.

1. **Lolium perenne** L. PERENNIAL RYE GRASS.
Grassland and open ground; common. June. Cultivated as a lawn grass, especially in parks; criginally from Eur.

51. AGROPYRON Beauv. WHEAT GRASS.

1. **Agropyron repens** (L.) Beauv. COUCH GRASS.
Open ground and grassland; frequent. June. Introduced from Eur. (*Triticum repens* L.)
A troublesome weed on account of its creeping rootstocks. Also called quack, quitch, and quick grass.

52. SECALE L.

1. **Secale cereale** L. RYE.
Occasional along roads and in the vicinity of grain fields. June. Cultivated for grain and forage; native of the Old World.

53. TRITICUM L.

1. **Triticum aestivum** L. WHEAT.
Vicinity of elevators and waste land where the seed has been accidentally scattered. June. Not established in our flora. Native of the Old World. (*T. vulgare* Vill.)

54. HORDEUM L. BARLEY GRASS.

Plants perennial.
  Awns 4–5 cm. long .... 1. **H. jubatum.**
  Awns usually not over 1 cm. long .... 2. **H. nodosum.**
Plants annual.
  Glumes, at least some of them, ciliate .... 3. **H. murinum.**
  Glumes not ciliate.
    Awns as much as 10 cm. long; blades 5–10 mm. wide .... 4. **H. vulgare.**
    Awns 1–1.5 cm. long; blades narrow .... 5. **H. pusillum.**

1. **Hordeum jubatum** L. SQUIRRELTAIL GRASS.
Open ground; rare. July. Western U. S.; introduced in the eastern U. S.

2. **Hordeum nodosum** L.
Open dry ground; infrequent. June. Common in the western U. S.; also in Eur. and Asia.

3. **Hordeum murinum** L.
Waste places; rare. Introduced from Eur.

4. **Hordeum vulgare** L. BARLEY.
Along railroads and in waste places; occasional. June. Cultivated as a cereal; native of the Old World.

5. **Hordeum pusillum** Nutt.
Open dry ground; rare; Canal Road (*Steele*). June. Western U. S.; sparingly introduced in the eastern U. S.

55. ELYMUS L. WILD RYE.

Glumes subulate, not indurate at base, with about 2 strong nerves; culms slender.
  Lemmas pubescent .... 1. **E. striatus.**
  Lemmas glabrous .... 1a. **E. striatus arkansanus.**
Glumes narrow but not subulate, indurate at base, about 5-nerved.
  Spike nodding; awns curved-spreading; glumes divergent but not much bowed-out at base .... 2. **E. canadensis.**
  Spike erect; awns straight; glumes bowed-out at base, the induration prominent.
    Glumes and lemmas glabrous .... 3. **E. virginicus.**
    Glumes and lemmas hirsute.
      Awn not longer than the lemma .... 3a. **E. virginicus hirsutiglumis.**
      Awn long and somewhat spreading .... 4. **E. australis.**

1. **Elymus striatus** Willd.
Rocky woods; frequent. Summer. Northern states, south to Va.

1a. **Elymus striatus arkansanus** (Scribn. & Ball) Hitchc.
Rocky woods; rare; along the Potomac above the fall line. Summer. Southern states, north to Md.

2. **Elymus canadensis** L. WILD RYE.
Open low ground; rare; Fourmile Run (*Dewey*). July. Eastern U. S.

3. Elymus virginicus L. TERRELL GRASS.

Low ground and open woods; frequent. July. Eastern U. S.

A form with narrower, less distinctly bowed-out glumes has been called *E. glabriflorus* Scribn. & Ball.

3a. Elymus virginicus hirsutiglumis (Scribn.) Hitchc.

Moist places; rare; along the Potomac. Aug. Northern states, south to Va.

4. Elymus australis Scribn. & Ball.

Rocky woods; frequent above the fall line along the Potomac. July. Southern states, north to Conn.

56. HYSTRIX Moench.

1. Hystrix patula Moench. BOTTLE-BRUSH.

Rocky wooded slopes; frequent. July. Eastern U. S. (*Gymnostichum hystrix* Schreb.; *H. hystrix* Millsp.)

The slender glaucous culms and pale, horizontally spreading spikelets stand out against the dark background of the wooded slopes, forming a charming picture.

57. ARUNDINARIA Michx.

1. Arundinaria tecta (Walt.) Muhl. SMALL CANE.

Swamps or moist soil; near Ammendale, and beyond our limits between Washington and Baltimore. Southern states, north to Md.

17. CYPERACEAE. Sedge Family.

Achene inclosed in a membranaceous sac (the perigynium). Flowers unisexual; plants perennial..13. **CAREX.**

Achene not inclosed in a perigynium.

- Flowers unisexual, the staminate and pistillate spikelets crowded in the same inflorescence; achenes white, bony, globular........................12. **SCLERIA.**
- Flowers perfect; achenes not bonelike.
  - Spikelets flat, the flowers 2-ranked.
    - Inflorescence axillary; achene beaked; bristles longer than the achene. 3. **DULICHIUM.**
    - Inflorescence terminal; achene beakless; bristles none.
      - Spikelets several to many-flowered..........................1. **CYPERUS.**
      - Spikelets 1-flowered, sessile in a small compact head or glomerule. 2. **KYLLINGA.**
  - Spikelets terete, the flowers spirally imbricate.
    - Spikelets with 1 or 2 beaked achenes. Bristles present..11. **RYNCHOSPORA.**
    - Spikelets with several to many achenes.
      - Culms leafless, terete or flattened; spikelet solitary, terminal. 4. **ELEOCHARIS.**
      - Culms leafy (the leaves sometimes bladeless); spikelets few to many, if solitary the spikelet lateral.
        - Perianth of 1 or more flat scales; bristles present or wanting.
          - Achene and scales stipitate; bristles 3; plants perennial.9. **FUIRENA.**
          - Achene and solitary minute scale sessile; bristles wanting; minute tufted annual..............................10. **HEMICARPHA.**
        - Perianth wanting or of bristles only.
          - Bristles wanting. Achenes minutely reticulate; inflorescence umbellate.
            - Achene with a minute tubercle, 3-angled; blades capillary. 5. **STENOPHYLLUS.**
            - Achene not tuberculate; blades flat or concave...6. **FIMBRISTYLIS.**
          - Bristles present. Plants perennial.
            - Bristles few (1–8), not long and silky, usually not exceeding the scales. 7. **SCIRPUS.**
            - Bristles numerous, long and silky, much exceeding the scales. 8. **ERIOPHORUM.**

1. CYPERUS L.

Plants annual, tufted.
  Achenes lenticular; stigmas 2. Rachilla narrow, continuous, the scales and achenes deciduous; culms mostly less than 30 cm. tall.
    Scale tips not appressed; spikelets not over 2 mm. wide.....**1. C. microdontus.**
    Scale tips appressed; spikelets 2.5–3 mm. wide.
      Scales reddish-tinged; achenes dull brown, 1.2 mm. long.......**2. C. diandrus.**
      Scales yellowish; achenes shining black, less than 1 mm. long.**3. C. flavescens.**
  Achenes 3-sided; stigmas 3.
    Spikelets crowded on a very short axis, forming flabellate or round heads, these solitary or in short-rayed umbels.
      Scale tips acuminate, recurved...................................**4. C. aristatus.**
      Scale tips blunt, not recurved...................................**5. C. fuscus.**
    Spikelets pectinate on an elongate axis; umbel usually many-rayed.
      Spikes 2–3 times as long as broad; rachilla continuous, the scales and achenes deciduous.......................................**6. C. erythrorhizos.**
      Spikes about as broad as long; rachilla disarticulating, the achenes attached. **7. C. speciosus.**
Plants perennial, hard and cormlike at base or stoloniferous.
  Rachilla persistent after the fall of the scales and achenes.
    Spikelets minute, not over 4 mm. long, nearly as broad, ovate, crowded in dense heads, these in long-rayed umbels.....................**8. C. pseudovegetus.**
    Spikelets usually 10 mm. long or more, linear.
      Plants not stoloniferous; culms cormlike at base; spikelets in subglobose heads, solitary or few......................................**9. C. filiculmis.**
      Plants very smooth, almost waxy, stoloniferous, the stolons bearing hard tubers; spikelets loosely pectinate.
        Scales reddish chestnut; spikelets about 1.5 mm. wide.......**10. C. rotundus.**
        Scales stramineous; spikelets about 1 mm. wide..........**11. C. esculentus.**
  Rachilla falling from the axis of the spike, either entire or disarticulating.
    Spikelets strongly flattened. Umbels large, one-quarter to one-third the entire height of the plant.....................................**12. C. strigosus.**
    Spikelets subterete or but slightly flattened.
      Spikelets radiate, in dense subglobose or short-cylindric heads, few-flowered, bluntish.
        Heads globose or subglobose.............................**13. C. ovularis.**
        Heads short-cylindric ....**14. C. torreyi.**
      Spikelets reflexed, in cylindric or turbinate heads, sharp-pointed.
        Heads turbinate, the spikelets sharply reflexed; culms scabrous below the umbel.
          Basal leaves nearly as long as the culm; heads usually 2.5–3 cm. long, the base attenuate.........................**15. C. dipsaciformis.**
          Basal leaves much shorter than the culm; heads not over 2 cm. long, short-turbinate.....................................**16. C. retrofractus.**
        Heads subcylindric; culms smooth.
          Spikelets crowded.................................**17. C. lancastriensis.**
          Spikelets not crowded...............................**18. C. refractus.**

1. Cyperus microdontus Torr.

Wet sand and alluvium near streams; Bladensburg, Kenilworth, Hyattsville, and eastward; frequent. Aug.–Oct. Atlantic Coastal Plain. (*C. nuttallii* of Ward's Flora.)

2. Cyperus diandrus Torr.

Margins of ponds and streams; Chevy Chase Lake, Eastern Branch, and southward; frequent. July–Sept. Eastern and middle states. (*C. diandrus castaneus* of Ward's Flora.)

3. **Cyperus flavescens** L.

Wet banks and springy places; along Piney Branch, Rock Creek, Eastern Branch, and Potomac; frequent. July–Oct. Eastern U. S.

4. **Cyperus aristatus** Rottb.

Alluvial and sandy flats; flood plain of Rock Creek and the Potomac. July–Sept. Throughout the U. S. (*C. inflexus* Muhl.)

Dried specimens have the odor of slippery elm.

5. **Cyperus fuscus** L.

Adventive in wet waste ground near wharves; Washington and Alexandria: apparently infrequent, Aug.–Sept. Ballast grounds of Atlantic ports; European.

6. **Cyperus erythrorhizos** Muhl.

Common in alluvial flats in the wet sandy flood plain of the Potomac below Washington. Eastern and middle states.

On ground which becomes dry in late summer the plants form dwarf tufts; this form is the variety *pumilus* Engelm.

7. **Cyperus speciosus** Vahl.

Sandy margins of streams; common along the Potomac south of Washington, infrequent to the east, not found in the northwest. Aug.–Oct. Eastern and middle states. (*C. michauxianus* Schult.; included in *C. ferax* Rich. in Gray's Manual.)

8. **Cyperus pseudovegetus** Steud.

Frequent in alluvial soil among rocks; margin of the Potomac from Great Falls to below Washington. July–Sept. Atlantic and Gulf coasts, also in Kans. and Mo. (*C. virens* of Ward's Flora.)

9. **Cyperus filiculmis** Vahl.

Common in dry sandy open ground and open pine woods. June–Sept. Eastern and middle states.

10. **Cyperus rotundus** L. NUT GRASS.

Found in 1899 in waste ground west of the old fishpond. Oct. Atlantic and Gulf states; abundant and often a troublesome weed in the South.

11. **Cyperus esculentus** L.

Common in low wet waste ground, especially along the Potomac. July–Oct. Throughout the U. S. (*C. phymatodes* Muhl.)

12. **Cyperus strigosus** L.

Common in alluvial ground near streams, everywhere. Aug.–Oct. Throughout the U. S.

13. **Cyperus ovularis** (Michx.) Torr.

Dry sandy wood borders and old fields; frequent throughout. July–Sept. Atlantic and middle western states.

14. **Cyperus torreyi** Britton.

Rare; found in a low field at Bennings. July–Sept. Atlantic Coastal Plain. (*C. cylindricus* Britton, not Boeckl.)

15. **Cyperus dipsaciformis** Fernald.

Dry sandy woods; frequent. July–Sept. N. J. and southward, and in Ky. (Included in *C. retrofractus* in Britt. & Brown, Illustr. Fl.)

16. **Cyperus retrofractus** (L.) Torr.

Dry sandy or rocky soil; Munger's Hill. Oct. Atlantic Coastal Plain and in the lower Mississippi Valley.

17. **Cyperus lancastriensis** Porter.

Common in low, sandy or gravelly, open ground along the Potomac. July–Oct. Middle Atlantic states.

18. **Cyperus refractus** Engelm.

Common in dry wood borders and banks along Rock Creek, Eastern Branch, and Potomac. N. J. to Ga. and Mo.

2. KYLLINGA Rottb.

1. Kyllinga pumila Michx.

Holmead Swamp (*Waite*). Coastal Plain.

3. DULICHIUM L. Rich.

1. Dulichium arundinaceum (L.) Britton.

In sluggish water bordering streams and ponds; frequent, especially along the Potomac. July–Oct. Throughout the U. S. (*D. spathaceum* Pers.)

4. ELEOCHARIS R. Br. SPIKE RUSH.

Spikelets not thicker than the spongy 4-angled culm. An aquatic, about 1 meter tall. **10. E. quadrangulata.**
Spikelets much thicker than the culm.
Achenes 3-angled; stigmas 3.
Culms capillary, 3–12 cm. tall (elongate when submerged).......**1. E. acicularis.**
Culms slender but not capillary.
Plants perennial, with running rootstocks.
Culms 4-angled, very slender; scales reddish chestnut.........**2. E. capitata.**
Culms flattened; scales fuscous..........................**3. E. acuminata.**
Plants annual, tufted, without rootstocks. Achene reticulate, its tubercle nearly as large as the body ....**4. E. tuberculosa.**
Achenes biconvex; stigmas 2.
Plants rarely over 10 cm. tall, annual; upper sheaths with loose pale scarious tips.
Spikelets dark, the scales purple-brown, with green midribs ....**5. E. olivacea.**
Spikelets pale, the scales whitish.............................**6. E. flaccida.**
Plants mostly more than 20 cm. tall (10–20 in *E. engelmanni*); upper sheaths with close firm dark-margined tips.
Plants perennial, with creeping rootstocks.....................**9. E. palustris.**
Plants annual, densely tufted.
Spikelets cylindric, tapering at the apex, commonly 1 cm. long; bristles about equaling the achene..........................**7. E. engelmanni.**
Spikelets ovoid or ovoid-oblong, blunt, rarely over 8 mm. long; bristles exceeding the achene...............................**8. E. obtusa.**

1. Eleocharis acicularis (L.) Roem. & Schult.

Mud flats and shallow water along Piney Branch and the Potomac at Chain Bridge. July–Sept. Throughout the U. S.

Plants perennial by delicate capillary rootstocks.

2. Eleocharis capitata (L.) R. Br.

Moist open ground; Takoma Park and eastward; infrequent. Eastern U. S. (*E. tenuis* Schult.)

This species was originally described from Virginia as *Scirpus capitatus*. The culm is described as terete and the spike as subglobose, but Dr. Blake, who has examined the specimen in the British Museum, finds these statements to be erroneous, the plant being the one with 4-angled culms and narrowly ovoid spikelets later named *E. tenuis*.[1]

3. Eleocharis acuminata (Muhl.) Nees.

Moist open ground along the Potomac; frequent. May–June. Eastern states, north to N. Y. (*E. compressa* Sulliv.)

4. Eleocharis tuberculosa (Michx.) Roem. & Schult.

Sandy bogs; vicinity of Brightwood; Holmead Swamp; Howard University reservoir. July–Sept. Atlantic states.

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[1] See Blake, S. F., Notes on the Clayton Herbarium. Rhodora **20**: 23. 1918.

5. **Eleocharis olivacea** Torr.

Boggy soil; Holmead Swamp and about the reservoir near Howard University. July–Sept. Me. to N. C. and Mich.

6. **Eleocharis flaccida** (Reichenb.) Urban.

In shallow water and mud flats; Hunting Creek. Coastal Plain from N. J. southward. (*E. ochreata* Steud.)

7. **Eleocharis engelmanni** Steud.

Muddy ground; south of Washington; infrequent. June–Aug. Mass. to Mo.

8. **Eleocharis obtusa** (Willd.) Schult.

Mud flats and moist stream borders; common, especially to the east and south. May–Sept. Eastern and northern U. S.

9. **Eleocharis palustris** (L.) Roem. & Schult.

In shallow water or open marshy ground; Fourmile Run; Dyke; Ead's Mill; opposite Alexandria. May–July. Throughout the U. S.

9a. **Eleocharis palustris glaucescens** (Willd.) A. Gray.

Alluvial flats; infrequent; Little Falls and southward. May–June. Throughout the U. S.

More slender than the species.

10. **Eleocharis quadrangulata** (Michx.) Roem. & Schult.

In shallow water; along Eastern Branch; rare. July–Sept. Eastern and middle states. (*E. mutata* of Britt. & Brown, Illustr. Fl.)

5. STENOPHYLLUS Raf.

1. **Stenophyllus capillaris** (L.) Britton.

Common in sandy open ground and fields. July–Sept. Throughout the U. S. (*Fimbristylis capillaris* A. Gray.)

6. FIMBRISTYLIS Vahl.

Achenes triangular, smooth; umbel decompound................**1. F. mucronulata.**
Achenes lenticular, strongly reticulate; umbel simple or nearly so..**2. F. baldwiniana.**

1. **Fimbristylis mucronulata** (Michx.) Blake.

Common in low, moist, sandy or alluvial soil, mostly near streams. July–Oct. Eastern U. S. (*F. autumnalis* of authors, not Roem. & Schult.)

2. **Fimbristylis baldwiniana** Torr.

Alluvium; Great Falls, Maryland. Aug. Atlantic Coastal Plain and lower Mississippi Valley. (Included in *F. laxa* in Gray's Manual.)

7. SCIRPUS L.

Involucral bract 1, appearing like a continuation of the culm, or wanting.
  Involucral bract wanting; spikelets solitary. Plants leafy, densely tufted, perennial, 15–20 cm. tall..**1. S. planifolius.**
  Involucral bract developed, erect; spikelets 2 to many, rarely 1.
    Culms sharply 3-angled; 2 or 3 leaf blades well developed . .....**4. S. americanus.**
    Culms terete; sheaths bladeless.
      Plants annual, slender, rarely 50 cm. tall; spikelets 1–6, in a close head.
        Achenes turgid, biconvex; bristles 6, barbed, about equaling the achene. **2. S. debilis.**
        Achenes plano-convex; bristles 1 or 2 smooth rudiments or none. **3. S. smithii.**
      Plants perennial, robust, commonly 2 meters tall; spikelets numerous, in a drooping umbel..**5. S. validus.**

Involucral bracts several, foliaceous. Culms 3-angled, leafy; plants perennial.
  Spikelets large, about 2 cm. long at maturity, ovate. Scales awn-tipped.
    Achenes sharply 3-angled; spikelets numerous, in a compound umbel. **6. S. fluviatilis.**
    Achenes plano-convex; spikelets few to several, in simple or nearly simple umbels. **7. S. robustus.**
  Spikelets not over 8 mm. long, very numerous, in decompound umbels.
    Spikelets pedicellate, in loose clusters in large drooping panicles, or if in dense glomerules the spikelets woolly from the long smooth delicate bristles.
      Spikelets cylindric, 6–8 mm. long, in loose panicles; bristles not exserted beyond the scales.......................................**8. S. lineatus.**
      Spikelets ovate or subglobose, not over 5 mm. long, woolly from the exserted bristles.
        Spikelets mostly in glomerules of 3–5.
          Glomerules not congested in dense heads..................**9. S. cyperinus.**
          Glomerules congested in dense heads.......**9a. S. cyperinus condensatus.**
        Spikelets solitary, or in small clusters with pedicellate lateral spikelets. **10. S. eriophorum.**
    Spikelets sessile (not over 5 mm. long), in dense glomerules, these in stiff-rayed decompound umbels; bristles shorter than the scales.
      Spikelets ruddy brown, commonly proliferous. Bristles flexuous, much longer than the achenes ....**11. S. polyphyllus.**
      Spikelets olive or greenish brown.
        Spikelets 3–8 in each glomerule; umbel loose and drooping. **12. S. sylvaticus.**
        Spikelets several to many, in dense glomerules; rays of the umbel stiff.
          Sheaths and often the leaves nodulose; bristles as long as the achenes. **13. S. atrovirens.**
          Sheaths not nodulose; bristles short or wanting.........**14. S. georgianus.**

1. Scirpus planifolius Muhl.

Rocky woods; common from Cleveland Park north and west and along Sligo Creek, below Takoma Park. Apr.–June. Vt. to Md. and Mo.

2. Scirpus debilis Pursh.

Wet sandy open ground and mud flats; frequent near the Eastern Branch and Potomac; also at Terra Cotta. July–Sept. Eastern U. S.

3. Scirpus smithii A. Gray.

Wet shores; beach of Hunting Creek, near Alexandria. July–Sept. Me. to Va. and Mich.

4. Scirpus americanus Pers.

Open marshy ground in the flood plain of the Potomac, from Long Bridge southward; infrequent. June–Oct. Throughout the U. S. (*S. pungens* Vahl.)

5. Scirpus validus Vahl. BULRUSH.

Marshes and shallow water in the flood plain of the Eastern Branch and Potomac, forming a pure growth; infrequent. June–July. Throughout the U. S.

6. Scirpus fluviatilis (Torr.) A. Gray. RIVER CLUB RUSH.

Marshes; near the mouth of Eastern Branch and at Dyke. June–July. Northern states, south to Va.

7. Scirpus robustus Pursh.

Marshes along the Potomac below Alexandria; "Maltox Creek." June. Atlantic Coastal Plain.

8. Scirpus lineatus Michx.

Swales and moist wood borders; frequent along the Potomac. June. Eastern U. S.

9. **Scirpus cyperinus** (L.) Kunth. WOOL GRASS.

Swales and wet meadows; common, especially in the southern and eastern part of our range. Aug.–Sept. Atlantic coast to Tenn. and Ark.

9a. **Scirpus cyperinus condensatus** Fernald.

Swales and open meadows; Riverdale and Lanham. Sept. Northern Atlantic states.

10. **Scirpus eriophorum** Michx.

Swales and among openings along streams; common. July–Sept. Atlantic states and lower Mississippi Valley. July–Sept. (Included in *S. cyperinus* in Britt. & Brown, Illustr. Fl.)

11. **Scirpus polyphyllus** Vahl.

Swales, ditches, and wet wood borders; common. July–Oct. Eastern U. S.

Often conspicuously proliferous in the autumn, the inflorescence bearing few to several well-developed leafy plantlets, the culms leaning, bringing the plantlets near the earth. A form with spikelets as much as 5 mm. long has been called *S. polyphyllus macrostachys* Boeckl.

12. **Scirpus sylvaticus** L.

Marshes along the Eastern Branch; rare. Aug. Eastern U. S.

13. **Scirpus atrovirens** Muhl.

Swales, ditches, and wet wood borders; common along the Potomac. June–Aug. Northern states, south to Ga.

14. **Scirpus georgianus** Harper.

Wet sandy and alluvial soil in the flood plain of the Potomac at Long Bridge and southward. June–July. Northern states, south to Ga. (Included in *S. atrovirens* in Britt. & Brown, Illustr. Fl.)

8. ERIOPHORUM L. COTTON GRASS.

1. **Eriophorum virginicum** L.

Open ground in magnolia bogs; Terra Cotta and eastward; infrequent. July-Sept. Northern states, south to Ga.

9. FUIRENA Rottb.

1. **Fuirena hispida** Ell.

Frequent in open ground in magnolia bogs below the fall line. Aug.–Sept. Southern states, north to N. J.

At or after maturity producing ovate tubers close to the base of the culm.

10. HEMICARPHA Nees & Arn.

1. **Hemicarpha micrantha** (Vahl) Pax.

Open wet sandy ground; Zoological Park and Potomac bottom land near Lock No. 9. Sept. Throughout the U. S.

11. RYNCHOSPORA Vahl.

Achene bearing a beak 2–3 times its own length, the two together about 2 cm. long. Spikelets in large squarrose heads.

  Bristles shorter than the body of the achene; heads rather loose...1. **R. corniculata.**

  Bristles about twice as long as the body of the achene; heads compact. 2. **R. macrostachya.**

Achene bearing a small tubercle or beak much shorter than the body, the two together not over 8 mm. long.

  Achene transversely wrinkled; bristles not over half the length of the achene. 3. **R. cymosa.**

Achene smooth; bristles longer than the achene.
  Spikelets whitish or pale brown, in small dense cymose heads........4. **R. alba.**
  Spikelets dark brown.
    Spikelets in dense globose heads..............................5. **R. axillaris.**
    Spikelets in broad or narrow cymose heads.
      Achene ovoid, 1.2 mm. wide, rounded at base...........6. **R. gracilenta.**
      Achene obovoid, 0.8 mm. wide, with distinct spikelike base.
        Bristles downwardly barbed............................7. **R. capitellata.**
        Bristles upwardly barbed.................7a. **R. capitellata controversa.**

1. **Rynchospora corniculata** (Lam.) A. Gray.

Wet sand by the Potomac at Sandy Landing, Maryland, below Great Falls; collected but once. Sept. Coastal Plain, Del. southward.

2. **Rynchospora macrostachya** Torr.

Marshes along the lower part of the Eastern Branch and near Accotink Creek; infrequent. Aug.–Sept. Atlantic states and occasionally inland. (Included in *R. corniculata* in Britt. & Brown, Illustr. Fl.)

3. **Rynchospora cymosa** Ell.

Swales; Kenilworth and Lakeland. June–July. Southeastern states, north to N. J.

4. **Rynchospora alba** (L.) Vahl.

Open places in magnolia bogs below the fall line; frequent. July–Sept. Throughout the U. S.

5. **Rynchospora axillaris** (Lam.) Britton.

Among sphagnum in East Hyattsville Swamp. Aug.–Sept. Atlantic Coastal Plain.

6. **Rynchospora gracilenta** A. Gray.

Bogs below the fall line; small bog east of Brookland. Aug.–Sept. Atlantic Coastal Plain.

7. **Rynchospora capitellata** (Michx.) Vahl.

Swales and wet spots in woods; frequent. Eastern U. S. (*R. glomerata* of authors.)

7a. **Rynchospora capitellata controversa** Blake.

Wet ground; Holmead Swamp; near Aqueduct Bridge. Aug.–Sept. Pa. to Va.

There is a specimen of *R. fusca* (L.) Ait., labeled "near Washington, D. C., Dr. Geo. Vasey." The locality is doubtful.

12. SCLERIA Berg. NUT RUSH.

Achenes smooth, white and shining.
  Culms commonly about 1 meter tall; achene globose............1. **S. triglomerata.**
  Culms usually not over 50 cm. tall; achene ovate..................2. **S. oligantha.**
Achenes reticulate or papillose.
  Achenes reticulate; fascicles of spikelets few to several in a small panicle; axillary fascicles slender-peduncled..........................4. **S. reticularis.**
  Achenes papillose; fascicles of spikelets few, approximate; axillary fascicles, if present, subsessile.
    Foliage glabrous..3. **S. pauciflora.**
    Foliage pubescent............................3a. **S. pauciflora caroliniana.**

1. **Scleria triglomerata** Michx.

Wet sandy woods and swales; Terra Cotta and southeastward, below the fall line; frequent. June. Eastern U. S.

2. **Scleria oligantha** Michx.

Sandy woods; represented by a single collection by Vasey labeled "Washington, D. C., 1874." The specimen cited by Ward as collected at "Rock Creek above Davis's Quarry, June, 1874 (*Dr. Vasey*)" can not be found, unless the above specimen lacking data be it. June–Aug. Southern Atlantic Coastal Plain to Tex.

3. **Scleria pauciflora** Muhl.

Sandy woods; frequent above the fall line. May–July. Southern states, north to N. J.

3a. **Scleria pauciflora caroliniana** (Willd.) Wood.

Sandy field, east of Bennings. July. Eastern U. S., rare and local.

4. **Scleria reticularis** Michx.

Wet sandy open ground and magnolia swamps; Chevy Chase and eastward, mostly below the fall line; frequent; associated with sphagnum and *Panicum lucidum*. Aug.–Sept. Atlantic Coastal Plain and at the head of Lake Michigan.

13. CAREX L. Sedge.

Complete specimens with mature fruit are necessary for the identification of species in this genus. Diagnostic characters are found mainly in the shape, size, and texture of the perigynium (the sac-like body inclosing the achene); in the shape of the achene and the number of stigmas; in the relative position of the pistillate and staminate flowers (the latter usually represented in mature plants only by empty scales or, occasionally, by filaments); in the presence or absence of sheaths on the lower bracts of the culm; and in the appearance of the rootstocks.

Achenes lenticular; stigmas 2 [1]........................**Subgenus I. VIGNEA.**
Achenes trigonous: stigmas 3........................**Subgenus II. EUCAREX.**

Subgenus I. VIGNEA (Beauv.) Nees.

Staminate and pistillate flowers on the same spike (*C. bromoides* sometimes dioecious); lateral spikes sessile.

Staminate flowers above the pistillate.
  Spikes usually 10 or fewer, green when mature (*C. muricata* has purplish-tinged scales)........................**1. Muhlenbergianae.**
  Spikes usually more numerous, yellowish or tawny when mature.
    Beak of perigynium equaling or shorter than the body, the base not spongy.
      Perigynia papery, green to dull brown........................**2. Multiflorae.**
      Perigynia hard, shiny brown........................**3. Paniculatae.**
    Beak of perigynium much exceeding the body, the base spongy. **4. Stenorhynchae.**
Staminate flowers below, or occasionally intermixed with, the pistillate.
  Perigynia not wing-margined, at most thin on the margin and then spongy at base.
    Base of perigynium not spongy, the margin not thin.
      Spikes short, obovoid; beak of perigynium very short, obscure. **5. Canescentes.**
      Spikes long, lance-cylindric; beak of perigynium fully half as long as the body. **6. Deweyanae.**
    Base of perigynium spongy, the margins thin........................**7. Elongatae.**
  Perigynia wing-margined, not spongy at base. Spikes ovoid........................**8. Ovales.**

Subgenus II. EUCAREX Coss. & Germ.

One or more spikes strictly pistillate (except in *C. leptalea* and *C. typhina*, and sometimes in *C. squarrosa*), the terminal commonly staminate, the lateral often pedunculate.

Achenes lenticular; stigmas 2........................**9. Acutae.**

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[1] Six of our species of *Eucarex* have lenticular achenes and two stigmas. They are readily distinguished from the *Vigneae* by their having one or more spikes strictly staminate or nearly so. See key to *Eucarex*.

Achenes trigonous; stigmas 3.
Perigynia beakless or, if beaked, without rigid teeth.
Lower bracts of the inflorescence without conspicuous green sheaths.
Spikes solitary, terminal.
Perigynia beakless; scales short, hyaline.......... 10. **Polytrichoideae.**
Perigynia long-beaked; scales long, bractlike.......... 11. **Phyllostachyae.**
Spikes 2 or more.
Terminal spike entirely staminate.
Perigynia pubescent.
Leaves and culms glabrous.
Culms leafy (*C. vestita*).......... 24. **Hirtae.**
Culms not leafy.......... 12. **Montanae.**
Leaves and culms pubescent.......... 13. **Pubescentes.**
Perigynia glabrous.
Spikes stout, sessile or short-peduncled; perigynia nerved. 14. **Pallescentes.**
Spikes slender, drooping on slender peduncles; perigynia nerveless (*C. prasina*).......... 18. **Gracillimae.**
Terminal spike partly pistillate.
Perigynia nerveless except on the margins.
Spikes drooping; perigynia ascending (*C. prasina*).......... 18. **Gracillimae.**
Spikes erect; perigynia reflexed.......... 15. **Shortianae.**
Perigynia nerved.......... 16. **Virescentes.**
Lower bracts of the inflorescence with conspicuous green sheaths.
Perigynia nerveless or with few nerves thicker at the base.
Spikes slender, drooping.
Perigynia long-beaked.......... 17. **Debiles.**
Perigynia short-beaked.......... 18. **Gracillimae.**
Spikes stouter, ascending.......... 19. **Paniceae.**
Perigynia with many uniform nerves.
Nerves impressed.......... 20. **Griseae.**
Nerves elevated.
Perigynia trigonous in cross section.......... 21. **Laxiflorae.**
Perigynia circular in cross section.
Spikes slender, drooping (*C. oblita*).......... 17. **Debiles.**
Spikes stouter, ascending or divaricate.......... 22. **Granulares.**
Perigynia rigidly bidentate, the teeth sharp.
Achenes closely enveloped by the usually firm and tough perigynia.
Nerves of the perigynia few or none.
Perigynia reflexed.......... 23. **Flavae.**
Perigynia ascending.......... 24. **Hirtae.**
Nerves of the perigynia numerous (15–30).......... 25. **Pseudocyperae.**
Achenes loosely enveloped by the thin papery perigynia.......... 26. **Physocarpae.**

1. **Muhlenbergianae** Tuckerm.

Inflorescence comparatively short, usually green when mature.

Spikes loosely flowered, delicate; perigynia spongy below the middle.
Spikes approximate or nearly so; beak of perigynium smooth; scales acuminate. 1. **C. retroflexa.**
Spikes mostly remote; beak of perigynium minutely roughened; scales blunt.
Perigynium broadly lanceolate, sharply contracted into the flat beak; stigmas dark brown, thick, twisted.......... 2. **C. convoluta.**
Perigynium narrowly lanceolate, slightly contracted into the nearly terete beak; stigmas light brown, slender, straight.......... 3. **C. rosea.**

Spikes densely flowered, much coarser; perigynia not spongy below the middle (except in *C. conjuncta*).
  Leaves less than 4.5 mm. broad; sheaths tight, often thickened at the mouth (sheaths loose in *C. aggregata*).
    Scales tinged with reddish purple; perigynia 4–6.5 mm. long....**4. C. muricata.**
    Scales greenish or nearly hyaline; perigynia shorter.
      Heads 25–40 mm. long; lower spikes distinct (except in *C. aggregata*).
        Sheaths tight; beak of perigynium half as long as the body. **5. C. muhlenbergii.**
        Sheaths loose; beak of perigynium equaling the body......**9. C. aggregata.**
      Heads 10–20 mm. long; lower spikes not distinct.
        Scale body equaling the broadly ovate perigynium.......**6. C. mesochorea.**
        Scale body much shorter than the perigynium.
          Perigynium narrow at the base; leaves 2–4.5 mm. wide. **7. C. cephalophora.**
          Perigynium broad at the base, cordate or nearly so; leaves 0.7–2 mm. wide. **8. C. leavenworthii.**
  Leaves more than 4.5 mm. broad (usually narrower in *C. aggregata*); sheaths loose, membranaceous.
    Culms sharply triangular, not winged; perigynium not spongy below the middle.
      Lower spikes not separate; only the broadest leaves, if any, over 4.25 mm. broad..**9. C. aggregata.**
      Lower spikes widely separate; leaves mostly 5 mm. broad or more. **10. C. sparganioides.**
    Culms narrowly winged; perigynium slightly spongy below the middle. **11. C. conjuncta.**

2. Multiflorae Kunth.

Represented by only 2 species in our region. Conspicuous by its many-flowered, often somewhat compound heads, dense, dull brown or yellow-brown spikes, and numerous setaceous bracts.

Leaves longer than the culm; beak of perigynium equaling the body. **12. C. vulpinoidea.**
Leaves shorter than the culm; beak of perigynium much shorter than the body. **13. C. annectens.**

3. Paniculatae Kunth.

Heavy-headed plants, superficially resembling *Echinochloa crusgalli*.

A single species..**14. C. decomposita.**

4. Stenorhynchae Holm.

Two closely allied species are found here, somewhat resembling the coarser-headed species of the *Muhlenbergianae*, but the long-beaked awl-shaped perigynia, with very corky bases, are very distinct from any in that group.

Sheaths wrinkled, loose at the mouth..............................**15. C. stipata.**
Sheaths not wrinkled, tight at the mouth......................**16. C. laevivaginata.**

5. Canescentes Fries.

Plants pale green, somewhat glaucous.

A single species..**17. C. canescens.**

6. **Deweyanae** Tuckerm.

Sometimes united with the following section.

A single species..18. **C. bromoides.**

7. **Elongatae** Kunth.

Spikes comparatively few-flowered; perigynia usually radiate or reflexed; staminate flowers mostly below the pistillate. Closely allied species, growing usually in wet woods, borders of ponds, or other locations where the soil is fairly moist throughout the season.

Perigynium broadest near the middle, conspicuously nerved; beak short and smooth.
19. **C. rosaeoides.**
Perigynium broadest near the base; beak serrulate.
  Beak of perigynium half as long as the body, sharply toothed. Scales acutish to acuminate.
    Leaves 1 mm. wide or more, usually shorter than the culm; perigynia ovate.
20. **C. cephalantha.**
    Leaves less than 1 mm. wide, much longer than the culm; perigynia lanceolate.
20a. **C. angustior.**
  Beak of perigynium not more than one-third as long as the body, thin-toothed.
    Scales usually acute to acuminate; beak of perigynium about one-third as long as the body...21. **C. incomperta.**
    Scales usually obtuse to slightly acute; beak of perigynium very short.
      Leaves 1–2 mm. broad, shorter than the culm; perigynium nearly or quite nerveless on the inner side..22. **C. interior.**
      Leaves narrower, usually much longer than the culm; perigynium strongly nerved on the inner side ....23. **C. howei.**

8. **Ovales** Kunth.

Spikes ovate, dense, usually tawny; perigynia wing-margined; staminate flowers always below. Perhaps the most distinct section of the *Vigneae*, certainly the most complex.

Perigynia narrowly to broadly lanceolate, at least two and one-half times as long as broad, much exceeding the scales.
  Leaves at most 3 mm. wide, those of the sterile shoots few, ascending; spikes glossy brown or straw-colored, pointed...................................24. **C. scoparia.**
  Leaves wider, those of the sterile shoots very numerous, widely spreading; spikes green or dull brown, blunt.
    Tips of perigynia appressed or ascending; spikes 7–12 mm. long.
25. **C. tribuloides.**
    Tips of perigynia widely spreading or recurved; spikes 4–8 mm. long.
      Inflorescence flexuous, elongate; culm weak, slender..........26. **C. projecta.**
      Inflorescence compact, oblong; culm stiff..................27. **C. cristatella.**
Perigynia narrowly ovate to suborbicular or obovate, not more than twice as long as broad, often equaled or exceeded by the scales.
  Perigynia 3–4 mm. long, nerveless or finely nerved on the inner face.
    Spikes gray-green when mature. Scales usually obtuse. ...28. **C. albolutescens.**
    Spikes straw-colored or brownish when mature.
      Hyaline portion of sheath very short; scales hyaline, with a conspicuous green stripe on each side of the midrib........................29. **C. straminea.**
      Hyaline portion of sheath longer; scales tinged with reddish brown, without green stripes...30. **C. festucacea.**

Perigynia 4 mm. long or more, often strongly nerved on the inner face.
  Scales obtuse or, at most, acutish. Spikes straw-colored or ferruginous. 31. **C. brevior.**
  Scales long-acuminate or aristate.
    Inflorescence stiff; spikes green or dull brown; perigynia obovate, abruptly narrowed at the base.......32. **C. alata.**
    Inflorescence flexuous; spikes becoming dark brown; perigynia suborbicular, abruptly slender-beaked.......33. **C. hormathodes.**

9. **Acutae** Fries.

Marsh, swamp, or bog plants, common in low grounds and along streams throughout the region.

Scales long-aristate; achenes strongly constricted at the middle.
  Sheaths glabrous; lower pistillate scales abruptly long-awned.......34. **C. crinita.**
  Sheaths rough-hispid; lower pistillate scales tapering into the awn..35. **C. gynandra.**
Scales obtuse to acuminate; achenes not constricted.
  Beak of mature perigynium twisted when dry.......36. **C. torta.**
  Beak not twisted.
    Culms densely cespitose, forming tufts; stolons inconspicuous; sheaths strongly filamentose.......37. **C. stricta.**
    Culms forming loose beds; stolons long and conspicuous; sheaths at most slightly filamentose.
      Mature perigynia straw-colored, few-nerved.......38. **C. emoryi.**
      Mature perigynia green, nerveless.......39. **C. aquatilis.**

10. **Polytrichoideae** Tuckerm.

A characteristic bog plant (placed by Kükenthal in the subgenus *Primocarex*).

A single species.......40. **C. leptalea.**

11. **Phyllostachyae** Tuckerm.

Scales bractlike, almost or quite enveloping the perigynia.

Perigynia somewhat 2-edged, oblong; pistillate flowers usually 3–10; leaves pale green, 1.5–4 mm. wide.......41. **C. willdenovii.**
Perigynia globose, with long slender beaks; pistillate flowers usually 1–3; leaves darker, 1–2 mm. wide.......42. **C. jamesii.**

12. **Montanae** Fries.

Low plants with small heads, usually in dry soil of wooded or open banks; in this region the earliest to mature.

Culms short, many of them hidden among the leaf bases.
  Scales purplish black on each side of the midrib.......43. **C. nigromarginata.**
  Scales green, with lighter or hyaline margins.......44. **C. tonsa.**
Culms long, none of them hidden among the leaf bases.
  Plants not stoloniferous; leaves 2–4 mm. wide.......45. **C. communis.**
  Plants stoloniferous; leaves 0.5–3 mm. wide.
    Stolons short, tawny-fibrillose; plants light green.......46. **C. emmonsii.**
    Stolons long, strongly red-fibrillose; plants dark green....47. **C. pennsylvanica.**

13. **Pubescentes** Kükenth.

Plants pubescent throughout; terminal spike strictly staminate.

A single species.......48. **C. hirtifolia.**

14. **Pallescentes** Fries.

Plant glabrous; staminate spike terminal; pistillate spikes short and stout; perigynia ascending.

A single species..**49. C. pallescens.**

15. **Shortianae** Bailey.

Spikes brown, evenly cylindric, the tips of the densely crowded perigynia recurved and without teeth.

A single species..**50. C. shortiana.**

16. **Virescentes** Kunth.

Leaves long and slender, the sheaths, at least, hairy; terminal spike staminate below; lower bracts of the inflorescence without conspicuous green sheaths.

Perigynia densely pubescent.
  Terminal spike 9–18 mm. long; leaves usually exceeding the culms...**51. C. swanii.**
  Terminal spike 18–40 mm. long; leaves usually shorter than the culms.
52. C. virescens.
Perigynia glabrous (at least at maturity).
  Leaves (except sheaths) glabrous..............................**53. C. caroliniana.**
  Leaves pubescent.
    Scales acute to short-cuspidate, shorter than the perigynia; staminate portion of terminal spike short..................................**54. C. complanata.**
    Scales rough-cuspidate, usually much longer than the perigynia; staminate portion longer...**55. C. bushii.**

17. **Debiles** Carey.

Habit very lax; base of the lowest bract of the inflorescence long-sheathing; spikes slender, drooping; perigynia thin-toothed, more or less long-beaked.

Perigynia lightly nerved or nerveless; upper sheaths glabrous..........**56. C. debilis.**
Perigynia strongly nerved; upper sheaths puberulent...................**57. C. oblita.**

18. **Gracillimae** Carey.

Perigynia short-beaked, few-nerved, in long drooping spikes; lowest bracts of the inflorescence sheathing.

Leaves glabrous; perigynia less than 2 mm. thick.
  Lower bracts of the inflorescence long-sheathing.................**58. C. gracillima.**
  Lower bracts short-sheathing..**59. C. prasina.**
Leaves pubescent; perigynia more than 3 mm. long....................**60. C. davisii.**

19. **Paniceae** Tuckerm.

Plant with long slender rootstocks and rather laxly flowered pistillate spikes of strongly few-nerved perigynia.

A single species..**61. C. tetanica.**

20. **Griseae** Bailey.

Distinguished from all other species in our region by the impressed nerves of the perigynia.

Perigynia tapering at the base, constricted at the apex, obtusely triangular in cross section.
  Sheaths glabrous; perigynia 4.5–5 mm. long ....**62. C. oligocarpa.**
  Sheaths pubescent; perigynia 3.5–4 mm. long ....**63. C. hitchcockiana.**

Perigynia rounded at both ends, circular in cross section.
Leaves firm, very glaucous; lower scales exceeded by the perigynia. **64. C. glaucodea.**
Leaves thin, soft, not glaucous; lower scales at least equaling the perigynia.
Spikes widely scattered; leaves 2–4 mm. wide, erect; perigynia scarcely turgid. **65. C. amphibola.**
Spikes borne principally in the upper axils; leaves 4–6 mm. wide, spreading perigynia turgid.......... **66. C. grisea.**

21. Laxiflorae Kunth.

Flowering culms lateral; spikes more or less laxly flowered; perigynia subfusiform, many-nerved.

Perigynia sharply angled, short-tapering at the base.
Staminate scales dark brown or purplish; perigynia 5–7 mm. long. **67. C. careyana.**
Staminate scales straw-colored or pale brown; perigynia 2–4 mm. long.
Basal leaves 1–3 cm. wide; pistillate spikes sessile, erect; perigynia smooth. **68. C. platyphylla.**
Basal leaves usually narrower (if 1 cm. wide, the pistillate spikes flexuous on capillary peduncles); perigynia minutely roughened.
Scales blunt; staminate spikes sessile or nearly so; peduncles short, erect. **69. C. abscondita.**
Scales acuminate to aristate; staminate spikes usually strongly peduncled; lower peduncles capillary.
Perigynia 2.8–3.2 mm. long, short-beaked; leaves usually exceeding the culm, 2.5–5 mm. wide, erect.......... **70. C. digitalis.**
Perigynia 3.3–4 mm. long, beakless or nearly so; leaves usually exceeded by the culm, 4–8 mm. wide, spreading.......... **71. C. laxiculmis.**
Perigynia obtusely angled, long-tapering at the base.
Leaves 1.5–4 cm. wide; pistillate scales truncate. Culms flattened and wing-margined.......... **72. C. albursina.**
Leaves 0.3–2 cm. wide; pistillate scales acuminate to strongly cuspidate.
Spikes short, 5–10-flowered, the lower on capillary, spreading or drooping pedicels. **73. C. styloflexa.**
Spikes elongate, 8–20-flowered, the lower normally on stiff erect peduncles.
Perigynia obovoid; beak abruptly bent, minute; sterile shoots developing conspicuous culms.
Staminate spike usually small and hidden among the pistillate, short-stalked or sessile; culms stout, winged.......... **74. C. blanda.**
Staminate spike prominent, usually projecting above the pistillate, usually long-stalked; culms slender, not winged.......... **75. C. laxiflora.**
Perigynia ellipsoid-fusiform; beak straight or oblique, elongate; sterile shoots reduced to mere tufts of leaves.
Culms stout, densely cespitose; basal leaves less than 30 cm. long, their sides not parallel; perigynia appressed-ascending in an alternate-flowered spike.......... **76. C. anceps.**
Culms slender, often loosely cespitose; basal leaves usually more than 30 cm. long; perigynia spreading-ascending, mostly overlapping in the dense spike.......... **77. C. striatula.**

22. Granulares Bailey.

Perigynia brown, ascending, granular-roughened.

A single species.......... **78. C. granularis.**

23. **Flavae** Tuckerm.

Perigynia yellowish green, the tips spreading or reflexed; spikes short, aggregate.

A single species...79. **C. oederi.**

24. **Hirtae** Tuckerm.

Wet land plants with short-hairy or glabrous perigynia, usually with short stout teeth, these very thin in *C. vestita*, however.

Perigynia glabrous...80. **C. lacustris.**
Perigynia densely pubescent.
  Beak of perigynium strongly bidentate.......................81. **C. lanuginosa.**
  Beak of perigynium not strongly bidentate.......................82. **C. vestita.**

25. **Pseudocyperae** Tuckerm.

Perigynia many-nerved, scarcely inflated. Swamp and marsh plants.

Teeth of the perigynium 1.2–2 mm. long; plants stout.................83. **C. comosa.**
Teeth of the perigynium less than 1 mm. long; plants somewhat slender.
84. **C. hystericina.**

26. **Physocarpae** Drejer.

Late species, usually not mature before midsummer; relatively tall.

Body of the perigynium obconic or obovoid, truncately contracted into a prominent beak.
  Perigynia shorter than the rough-awned scales; terminal spike small, usually staminate...85. **C. frankii.**
  Perigynia longer than the scales; terminal spike with both staminate and pistillate flowers.
    Spikes oval; scales acuminate or awned.......................86. **C. squarrosa.**
    Spikes oblong-cylindric; scales blunt.......................87. **C. typhina.**
Body of the perigynium lanceolate to ovoid, not truncately contracted.
  Perigynia lanceolate or lance-subulate, tapering into the beak, many-nerved.
    Perigynia yellowish green, the teeth straight.......................88. **C. folliculata.**
    Perigynia bright green, the teeth refracted.......................89. **C. collinsii.**
  Perigynia broader, abruptly contracted into the beak, usually strongly ribbed.
    Length of perigynia less than 10 mm.
      Scales rough-cuspidate; staminate spike solitary.................90. **C. lurida.**
      Scales obtuse to short-cuspidate, not roughened; staminate spikes 2 or more.
        Culms scarcely spongy at the base; leaves scarcely or not at all nodulose; beak of perigynium usually roughened.................91. **C. bullata.**
        Culms thick and spongy at the base; leaves strongly nodulose; beak of perigynium smooth.......................................92. **C. rostrata.**
    Length of perigynia 10 mm. or more. Staminate spike solitary.
      Pistillate spikes globose or subglobose; style straight......93. **C. intumescens.**
      Pistillate spikes oblong or cylindric; style abruptly bent.
        Culms arising singly from an elongate rootstock; leaves 2–5 mm. wide.
94. **C. louisianica.**
        Culms cespitose; leaves 4–10 mm. wide.......................95. **C. lupulina.**

1. **Carex retroflexa** Muhl.

Thickets and dry woods; fairly common; chiefly in the Piedmont Region; also at Ammendale. May 10–June 1. Eastern U. S.

2. **Carex convoluta** Mackenzie.

Damp or rich woods; common in the Piedmont Region; also along Paint Branch, and at Ammendale. May–June. Me. to Neb. and Ala. (*C. rosea* of Ward's Flora.)

Besides the typical form, plants with much narrower leaves and smaller, somewhat ascending perigynia are often found.

3. Carex rosea Schkuhr.

Woods and thickets; common. Latter part of May. Eastern U. S. (*C. rosea radiata* Boott; *C. rosea minor* of Ward's Flora.)

A densely cespitose form with nearly prostrate culms, lax, almost capillary leaves, and extremely narrow perigynia is often found in damp, shaded places.

4. Carex muricata L.

Collected several times in the Mall. May 15–June 1. Me. to Ohio and Va.; locally naturalized from Eur.

5. Carex muhlenbergii Schkuhr.

Sparse throughout the region. May–June. Eastern U. S.

Nearly all the specimens collected here have the perigynia nerveless or nearly so (*C. muhlenbergii enervis* and *C. muhlenbergii xalapensis* of Ward's Flora), but a few have the perigynia more or less strongly nerved.

6. Carex mesochorea Mackenzie.

Apparently rare, although specimens have been collected in rather diverse localities; Ammendale; High Island; Dyke. May 20–June 10. D. C. to Tenn. and Kan.

7. Carex cephalophora Muhl.

Common throughout the Piedmont Region and extending into the Coastal Plain, at least along the wooded banks of streams. May–July. Eastern U. S.

8. Carex leavenworthii Dewey.

Seemingly not so common as the preceding species, but occurring throughout the region in woods or meadows. May 10–June 10. Ont. to D. C., Iowa, and Tex. (*C. cephalophora angustifolia* Boott.)

9. Carex aggregata Mackenzie.

Described from specimens collected in the District by Steele; not common. May 15–June 10. D. C. to Mo. (*C. divulsa* of Holm's list and *C. gravida* of Steele's list, apparently.)

10. Carex sparganioides Muhl.

Damp woods and thickets; fairly common. May–July. Northern states, south to Va.

Recognized by the broad, soft, deep green leaves and long interrupted inflorescences.

11. Carex conjuncta Boott.

Collected several times at the upper end of the Potomac Flats, where the Lincoln Monument now stands. Last of May and first half of June. Northern states, south to D. C.

Carex alopecoidea Tuckerm., listed by Holm, is not represented by specimens. It may be distinguished from the *C. conjuncta* by its few-nerved, distinctly stipitate perigynia.

12. Carex vulpinoidea Michx.

Mostly in wet or swampy places and swales; common. June–Aug. Eastern U. S. (This species, or the next, presumably *C. multiflora* of Brereton's Prodromus; *C. setacea* of Steele's list is possibly an extreme form of this.)

The culms are more slender than those of the following species and the leaves more lax, thus giving the plant a more spreading habit.

13. Carex annectens Bicknell.

Fields; common. June–Aug. Me. to Md. and Mo. (*C. xanthocarpa* Bicknell; *C. setacea ambigua* Fernald.)

Somewhat coarser and stiffer than the last.

14. Carex decomposita Muhl.

Borders of streams and ponds; Great Falls; Broadwater; Dyke. First week in June. Eastern U. S.

15. Carex stipata Muhl.

Marshes, swamps, and swales; common. May 15–June 15. Nearly throughout the U. S.

16. Carex laevivaginata (Kükenth.) Mackenzie.

Marshes, swamps, and swales; common. May 15–June 15. Mass. to N. C. and Ill. Leaves narrower than in the preceding.

17. Carex canescens L.

Swamps and bogs; Coastal Plain. Late May–July. Throughout the northern U. S. Reported to hybridize freely. Our form has widely separate spikes (*C. canescens disjuncta* Fernald.)

18. Carex bromoides Schkuhr.

Swampy woods on Alexanders Island, the only station known here. Latter part of May. Eastern U. S.

Occasionally dioecious.

19. Carex rosaeoides E. C. Howe.

Swampy woods; not common. May. Mass. to Ga. (*C. seorsa* E. C. Howe.)

20. Carex cephalantha Bicknell.

Wet woods and swamps. Middle of May to middle of June. Throughout the U. S. (*C. stellulata cephalantha* Fernald; *C. atlantica* of Steele's list.)

20a. Carex angustior Mackenzie.

In damp woods near Paint Branch Swamp, June 25, 1915 (*Standley* 11751). Northern U. S., south to D. C. (*C. stellulata angustata* Carey.)

21. Carex incomperta Bicknell.

Moist soil; the commonest species of the group in our region. May–June. Mass. to Mich. and Fla. (*C. stellulata* of Ward's Flora.)

22. Carex interior Bailey.

Edge of pool, Maryland shore opposite Plummers Island; Mount Vernon; also along the Patuxent. Last of May and first of June. Throughout the U. S. (*C. scirpoides* of Gray's Manual.)

23. Carex howei Mackenzie.

Collected June, 1882, *Ward*, no locality cited other than District of Columbia. Mass. to D. C. (*C. scirpoides capillacea* Fernald; *C. interior capillacea* Bailey.)

24. Carex scoparia Schkuhr.

Usually in low ground. May–Aug. Nearly throughout the U. S.

25. Carex tribuloides Wahl.

Low moist ground; less common than the preceding. July–Sept. Throughout the U. S., east of Rocky Mts. (*C. lagopodioides* Schkuhr.)

26. Carex projecta Mackenzie.

Not common, but found throughout the region. July–Sept. Northeastern U. S. (*C. tribuloides reducta* Bailey; *C. tribuloides moniliformis* Britton.)

27. Carex cristatella Britton.

Meadows; mostly confined to the Coastal Plain. July–Aug. Northeastern U. S. (*C. cristata* Schwein.)

28. Carex albolutescens Schwein.

Wet soil of the Coastal Plain. May–July. Atlantic and Pacific coasts and Great Lakes region. (*C. foenea* of Ward's Flora.)

29. Carex straminea Willd.

Wet soil. May–July. Eastern U. S. (*C. straminea aperta* of Ward's Flora.)

30. Carex festucacea Schkuhr.

Usually in wet soil. May–July. Northeastern U. S. (*C. straminea tenera* of Ward's Flora.)

31. Carex brevior (Dewey) Mackenzie.

Low open ground. May–July. Eastern U. S. (*C. festucacea brevior* Fernald.)

32. Carex alata Torr.

Moist soil; Coastal Plain. May–July. Eastern U. S.

33. **Carex hormathodes** Fernald.

Specimens approaching the variety *richii* Fernald have been collected near Great Falls. May–June. Eastern U. S.

34. **Carex crinita** Lam.

Swamps, ditches, and wet places. June–Aug. Eastern U. S.

35. **Carex gynandra** Schwein.

Along streams, swamps, and wet places; apparently mostly confined to the Coastal Plain. Late May–Aug. Northeastern U. S. and along the mountains to Ga. (*C. crinita gynandra* Schwein. & Torr.)

36. **Carex torta** Boott.

Along streams throughout; apparently rare and local. May–June. Northeastern U. S.

37. **Carex stricta** Lam.

Along the Potomac and Eastern Branch. May–June. Northeastern U. S. (*C. angustata* of Ward's Flora.)

38. **Carex emoryi** Dewey.

Shores of the Potomac and its larger tributaries in the Coastal Plain. May–June. Northeastern and central U. S. (*C. stricta angustata* of Steele's list.)

39. **Carex aquatilis** Wahl.

Shores of the Potomac and Eastern Branch. May–July. Northeastern U. S. (*C. saxatilis* of Brereton's Prodromus is probably this species.)

C. goodenovii Gay (as *C. vulgaris* Fries) is reported in Ward's Flora, but there are no specimens at hand.

40. **Carex leptalea** Wahl.

Bogs and swamps throughout, usually in sphagnum. June–Aug. Northern U. S. (*C. polytrichoides* Muhl.)

41. **Carex willdenovii** Schkuhr.

Usually in dry woods. May–July. Eastern U. S.

42. **Carex jamesii** Schwein.

Woods; apparently confined to the Piedmont Region. Apr.–July. Northeastern U. S. (*C. steudelii* Kunth.)

43. **Carex nigromarginata** Schwein.

Plummers Island; High Island; Linnean Hill. Apr.–May. Northeastern U. S.

44. **Carex tonsa** (Fernald) Bicknell.

Dry hills. May–July. Northeastern U. S. (*C. umbellata tonsa* Fernald; *C. umbellata* of Ward's Flora.)

45. **Carex communis** Bailey.

On rocks of Potomac shore above the fall line. May–June. Northeastern U. S. (*C. pedicellata* Britton.)

46. **Carex emmonsii** Dewey.

Common on dry hills and among rocks. May. Eastern U. S. (*C. varia* Muhl., not Lumnitz.)

47. **Carex pennsylvanica** Lam.

Common in dry soil. May. Northeastern U. S.

48. **Carex hirtifolia** Mackenzie.

Rich woods of the Piedmont Region. May–June. Northeastern U. S. (*C. pubescens* Muhl.)

49. **Carex pallescens** L.

Woods; Anacostia and near St. Elizabeths. May–Aug. Northeastern U. S. (Including *C. pallescens undulata* A. Gray.)

50. **Carex shortiana** Dewey.

Meadows and low woods. May–July. Northeastern U. S., south to D. C.

51. **Carex swanii** (Fernald) Mackenzie.

Dry woods; apparently confined to the Coastal Plain. Middle of May to middle of June. Northeastern U. S. (*C. virescens swanii* Fernald; *C. virescens elliptica* of Ward's Flora.)

52. **Carex virescens** Muhl.

Damp woods of the Piedmont Region. May–July. Eastern U. S. (*C. costellata* Britton.)

53. **Carex caroliniana** Schwein.

Meadows; mostly in the Coastal Plain. May–June. Southeastern U. S., north to N. J. (*C. triceps smithii* Porter.)

54. **Carex complanata** Torr.

Woods and meadows. May–June. Eastern U. S. (*C. triceps* Michx.; *C. triceps hirsuta* Bailey.)

55. **Carex bushii** Mackenzie.

Thickets and fields throughout; not common. May–July. R. I. to S. C. and Okla. (*C. triceps cuspidata* Dewey.)

The bristly, usually stiffly erect spikes distinguish this species from its allies.

56. **Carex debilis** Michx.

Swampy places; mostly in the Coastal Plain. June. Southeastern U. S.

Carex debilis pubera A. Gray was collected by Steele in a "swampy place, 1 mile east of Kenilworth, May 14, 1898."

57. **Carex oblita** Steud.

Swamps and bogs of the Coastal Plain. May–June. Eastern U. S. (*C. venusta minor* Boeckl.)

58. **Carex gracillima** Schwein.

Woods; mostly if not entirely confined to the Piedmont Region. May–June. Northeastern U. S.

59. **Carex prasina** Wahl.

Rich or wet woods; mostly above the fall line. May. Northeastern U. S. (*C. miliacea* Muhl.)

60. **Carex davisii** Schwein. & Torr.

Collected but once, "among rocks at Great Falls, Md., June 2, 1905, *Theodor Holm.*" Mississippi Valley; infrequent eastward.

61. **Carex tetanica** Schkuhr.

Woods; throughout. May–June. Northeastern U. S., south to D. C. (Including *C. tetanica woodii* of Ward's Flora.)

62. **Carex oligocarpa** Schkuhr.

Woods; Plummers Island; Glen Echo; Seven Locks. May–June. Northeastern U. S.

63. **Carex hitchcockiana** Dewey.

Rich woods; above the fall line. May–June. Northeastern U. S.

64. **Carex glaucodea** Tuckerm.

Apparently confined to the Coastal Plain. May–June. Northeastern U. S.

65. **Carex amphibola** Steud.

Dry soil. May–June. Eastern U. S. (*C. grisea angustifolia* Boott.)

66. **Carex grisea** Wahl.

Rich woods. May–June. Eastern U. S., south to N. C.

67. **Carex careyana** Torr.

Woods; Seven Locks; near Langley; rare. May. N. Y. to Mich. and D. C.

68. **Carex platyphylla** Carey.

Woods; apparently confined to the Piedmont Region. May. Me. to Ill. and Va.

69. **Carex abscondita** Mackenzie.

Moist woods; Beltsville; Riverdale. May–June. Eastern U. S. (*C. ptychocarpa* Steud.)

70. **Carex digitalis** Willd.

Woods and thickets; essentially a plant of the Piedmont Region, though specimens have been collected at Dyke. May–June. Eastern U. S.

71. **Carex laxiculmis** Schwein.

Wooded slopes of the Piedmont Region. May–June. Me. to Mo. and Va. (*C. retrocurva* Dewey.)

72. **Carex albursina** Sheldon.

Woods; Plummers Island and High Island. May. Northeastern U. S. (*C. laxiflora latifolia* Boott.)

73. **Carex styloflexa** Buckl.

Wet woods; Eastern Branch; Bennings; Beltsville. May. Eastern U. S. (*C. laxiflora styloflexa* Boott.)

74. **Carex blanda** Dewey.

Woods and meadows. May. Northeastern U. S. (*C. laxiflora blanda* Boott; *C. laxiflora varians* Bailey.)

75. **Carex laxiflora** Lam.

Woods and meadows. May. Eastern U. S. (Including *C. laxiflora gracillima* Boott and *C. laxiflora intermedia* Bailey.)

76. **Carex anceps** Muhl.

Woods and meadows; apparently common. May. Eastern U. S., south to N. C. (*C. laxiflora patulifolia* Carey; *C. laxiflora plantaginea* of Ward's Flora.)

77. **Carex striatula** Michx.

Woods and meadows. May. Southeastern U. S., north to N. J. (*C. laxiflora divaricata* Bailey.)

78. **Carex granularis** Muhl.

Moist woods. May–June. Eastern U. S.

79. **Carex oederi** Retz.

But once collected, "Washington, D. C., Aug. 9, 1879, *Ward;*" the one rather poor specimen seems to be near the var. *pumila* Fernald. Northern U. S. (Possibly *C. flava* of Brereton's Prodromus.)

80. **Carex lacustris** Willd.

Swamps and marshes of the Coastal Plain. May–July. Northeastern U. S., south to D. C. (*C. riparia* of Ward's Flora.)

81. **Carex lanuginosa** Michx.

Swampy places along the Potomac. May–June. Northern states, south to D. C.

82. **Carex vestita** Willd.

Sandy soil, throughout; not common. May–June. Northern states, south to Ga.

83. **Carex comosa** Boott.

Swamps and edges of pools. June–July. Nearly throughout the U. S. (*C. pseudocyperus* of Ward's Flora.)

84. **Carex hystericina** Muhl.

Swales and wet places; First Lock; flats below Chain Bridge. May–June. Widely distributed in the U. S.

85. **Carex frankii** Kunth.

Wet ground; Piedmont Region. June–Aug. Southern states, north to Pa. (*C. stenolepis* Torr.)

86. **Carex squarrosa** L.

Swampy places throughout the region. May–Aug. Eastern U. S.

87. **Carex typhina** Michx.

Lakeland, Aug. 4, 1900 and June 5, 1902 (*Steele*). Eastern U. S. (*C. typhinoides* Schwein.)

88. **Carex folliculata** L.

Rather frequent in boggy places, especially in the Coastal Plain. June–Aug. Northern states, south to N. C.

89. **Carex collinsii** Nutt.

Collected but once, in a small bog near Suitland, July 4, 1917. R. I. to Ga. (*C. subulata* Michx.)

90. Carex lurida Wahl.

Wet places, everywhere. Summer. Eastern U. S. (*C. tentaculata* Muhl.; including *C. lurida exundans* Bailey.)

Exceedingly variable; spikes subglobose to cylindric, sessile to long-pedunculate.

91. Carex bullata Schkuhr.

Swamps; Hyattsville. May–June. Me. to Ga.

92. Carex rostrata Stokes.

Bennings Bridge, June 8, 1879 (*Ward*). Nearly throughout the U .S. (*C. utriculata* Boott; *C. vesicaria* of Brereton's Prodromus, probably.)

93. Carex intumescens Rudge.

Low or wet woods of the Coastal Plain. May–Sept. Eastern U. S.

94. Carex louisianica Bailey.

Swamps along the Potomac and Eastern Branch. July–Aug. Southeastern U. S., north to D. C.

95. Carex lupulina Muhl.

Swamps. July–Aug. Eastern U. S.

C. lupulina pedunculata Dewey, with more or less pedunculate spikes, occurs sparingly.

Carex buxbaumii Wahl. (*C. fusca* of Steele's list) has been reported, but there are no specimens in the National Herbarium.

18. ARACEAE. Arum Family.

Leaves compound, composed of 3 or more leaflets. Flowers in a dense spike, this surrounded by a spathe .... **1. ARISAEMA.**
Leaves simple.
  Leaves linear, less than 1.5 cm. wide; flower spike naked, borne on a long, sharply 3-angled stalk, the stalk prolonged above the spike .... **2. ACORUS.**
  Leaves broader than linear, usually more than 5 cm. wide; flower stalk not prolonged above the spike.
    Leaves tapering at the base; flower spike naked .... **3. ORONTIUM.**
    Leaves not tapering at the base, usually somewhat heart-shaped or arrow-shaped; flower spikes surrounded by a spathe.
      Leaves ovate or oval, usually more or less heart-shaped; flower stalks very short and stout; sepals 4 .... **4. SPATHYEMA.**
      Leaves usually arrow-shaped and with long acute lobes at the base; flower stalks usually long and slender; sepals none .... **5. PELTANDRA.**

1. ARISAEMA Mart.

Leaves composed of 5–17 leaflets; spathe surrounding the flower spike erect, not hooded .... **1. A. dracontium.**
Leaves composed of 3 leaflets; spathe hooded (curved down over the flower spike). **2. A. triphyllum.**

1. Arisaema dracontium (L.) Schott. GREEN DRAGON.

Low rich woods; occasional. May–June; fr. Aug.–Sept. Eastern U. S.

2. Arisaema triphyllum (L.) Torr. JACK-IN-THE-PULPIT.

Moist woods and thickets; common. Apr.–June. Eastern N. Amer.

The species is a very variable one. The spathes are usually more or less colored or striped with brownish purple, but sometimes they are wholly green. Very often plants are wholly staminate or wholly pistillate. *A. triphyllum pusillum* Peck is a small form with the spadix 3–5 cm. long; in the larger plants the spadix is usually 5–7 cm. long. This form has been recognized as a species, *A. pusillum* (Peck) Nash, but hardly seems worthy of special designation.

The bulbs and bright red berries are intensely acrid. They contain needle-like crystals of calcium oxalate which readily penetrate the tongue when a piece is chewed, causing swelling, as do the leaves of the common caladium or elephant's-ear (*Colocasia antiquorum esculenta*), which also is a member of this family. Another name for the species is Indian turnip.

2. ACORUS L.

1. **Acorus calamus** L. SWEET FLAG.

Marshes and along streams; common along the lower Potomac. May–June. Eastern N. Amer.; also in Eur. and Asia.

Known also as calamus or flag-root. The thick rootstocks, as well as the leaves, have a pleasant flavor; they are used in medicine.

3. ORONTIUM L.

1. **Orontium aquaticum** L. GOLDEN CLUB.

In or at the edge of water; common and often very abundant. Apr.-May. Eastern U. S.

4. SPATHYEMA Raf.

1. **Spathyema foetida** (L.) Raf. SKUNK CABBAGE.

Swamps and wet woods; common. Feb.–Apr. Eastern N. Amer. (*Symplocarpus foetidus* Nutt.)

All parts of the plant have a strong, disagreeable odor which suggests the common name. The flowers appear very early in the spring, usually before the leaves. A group of plants in leaf as they appear in May in shown in plate 14.

5. PELTANDRA Raf.

1. **Peltandra virginica** (L.) Kunth. ARROW ARUM.

Swamps or shallow water; often very abundant. May–June. Eastern U. S.

The leaves vary greatly in shape. In the typical form, which is the most common, they are broadly halberd-shaped or arrow-shaped, with long acute lobes at the base. In *P. virginica heterophylla* (Raf.) Tidestrom the leaves are very narrow and either rounded at the base or with short rounded lobes. In *P. virginica angustifolia* (Raf.) Tidestrom the leaves are still narrower, 4 cm. wide or less, and usually rounded at the base. A detailed account of these forms has been published by Tidestrom.[1]

19. LEMNACEAE. Duckweed Family.

Plants without roots; plant body distinctly rounded above, minute, without nerves. 1. **WOLFFIA.**

Plants with roots; plant body distinctly flattened above, with one or more nerves.

Plant body 1–3-nerved, normally green throughout, bearing only one root. 2. **LEMNA.**

Plant body 5–15-nerved, normally purple beneath, bearing several roots. 3. **SPIRODELA.**

1. WOLFFIA Horkel.

1. **Wolffia columbiana** Karst.

Floating on the surface of spring-fed ponds on the Maryland shore of the Potomac near Plummers Island; also in pools along the canal, near the District line. Eastern U. S.

The smallest flowering plant of our region; not known to bloom locally.

2. LEMNA L. DUCKWEED.

1. **Lemna perpusilla** Torr.

Common on the surface of stagnant or slow-moving water. Blooms freely in midsummer, setting seed rather abundantly. Eastern U. S. (Probably *L. minor* of Ward's Flora.)

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[1] Rhodora **12**: 45–50. *pl. 83.* 1910.

3. SPIRODELA Schleid.

1. Spirodela polyrhiza (L.) Schleid.

Common on the surface of stagnant or slow-moving water, usually associated with *Lemna*. Blooms in midsummer, but rarely sets seed, and goes through the winter in a condensed resting stage in the mud on bottoms of ponds. Generally distributed in temperate and tropical regions. (*Lemna polyrhiza* L.)

20. XYRIDACEAE. Yellow-eyed grass Family.

1. XYRIS L. YELLOW-EYED GRASS.

Bracts of the head with a definitely marked green middle part; lateral sepals minutely erose on the keel; stems subcompressed and narrowly 2-winged toward the summit, slender, scarcely flexuous; leaves mostly flat, grasslike. **1. X. caroliniana.**

Bracts of the head usually green-tipped but with no marked line between the middle and the margins; lateral sepals ciliolate on the keel, a tuft of silky hairs at the apex; stems not compressed, obscurely 3-angled toward the summit, usually wiry and flexuous; leaves usually firm and flexuous .... **2. X. flexuosa.**

1. Xyris caroliniana Walt.

Among sphagnum in white sand of magnolia bogs; Powder Mill Swamp region and near Savage Station. Aug.–Sept. Atlantic Coastal Plain and at the head of Lake Michigan.

2. Xyris flexuosa Muhl.

Wet sandy sunny places in bogs and along streams and ditches; Takoma Park, southward and eastward, and at Arlington; infrequent. July–Aug. Eastern U. S.

21. ERIOCAULACEAE. Pipewort Family.

1. ERIOCAULON L. PIPEWORT.

Scapes weak, not rigid, not over 15 cm. tall unless submerged. Sheaths loose; leaves scarcely longer than the sheaths.............................**1. E. septangulare.**

Scapes firm, strongly 10–14-ridged, commonly 50 cm. tall, more or less twisted. **2. E. decangulare.**

1. Eriocaulon septangulare With.

Alluvial soil by streams and tidal flats; near the mouth of the Eastern Branch and at the mouth of Fourmile Run. Aug.–Sept. Eastern U. S.

2. Eriocaulon decangulare L.

Among sphagnum, mostly in magnolia bogs; Takoma Park, southward and eastward. Aug.–Sept. Atlantic Coastal Plain from N. J. southward.

The seeds of *Eriocaulon* are dispersed by the wind. At maturity in late September and October the chaffy floral bract and the fertile flower with its dry sepals and corolla and ripened capsule break away from the receptacle as a whole and float in the breeze, buoyed up by the tufts of copious hairs.

22. COMMELINACEAE. Spiderwort Family.

Most of the plants of this family are somewhat succulent, and have mucilaginous juice and frequent cells with needle-shaped crystals. Several species of different genera are cultivated as house plants, the most common being one of the Wandering Jews (*Zebrina pendula* Schnizl.), with leaves purple beneath.

Petals equal, purplish blue; filaments bearded; perfect stamens 6; bracts leaflike or inconspicuous; leaves long-linear. Flowers in terminal umbels. **1. TRADESCANTIA.**

Petals unequal, blue or white; filaments naked; perfect stamens 3; bracts heart-shaped, folded, forming a spathe with the margins often partly united; leaves short, ovate to lanceolate..2. **COMMELINA.**

1. TRADESCANTIA L. SPIDERWORT.

The commoner green-leafed Wandering Jew in cultivation is *T. fluminensis* Vell., of South America.

1. Tradescantia virginiana L.

Rich woodlands along the Potomac above Washington; common. May–Aug. Conn. to S. C.

The flowers open at night and the petals collapse by midday. A plant in bloom is shown in plate 15A.

2. COMMELINA L. DAY FLOWER.

Spathe margins free. Capsule 2-celled, 4-seeded; flowers with 2 blue petals and one smaller white one; seeds rugose; glabrous or somewhat hairy annuals; spathes few, axillary, peduncled..1. **C. communis.**

Spathe margins united at the base.

Capsule with 3 cells, each 1-seeded, or one cell reduced; leaf sheaths and spathes glabrous or with white hairs; plant low, perennial, with a cluster of somewhat fleshy roots; spathes single or few together, peduncled; petals 2, blue. 2. **C. erecta.**

Capsule with 2 2-seeded cells, the other cell with a single larger seed; leaf sheaths ciliate with stout brown hairs; plant 60–150 cm. high, perennial by horizontal rootstocks; spathes terminal, clustered, sessile; petals 3, blue..3. **C. virginica.**

1. Commelina communis L. WILD WANDERING JEW.

A common and persistent weed in gardens and moist soil. July–Oct. N. Y. to Ga.; introduced from eastern Asia.

The stems retain vitality for days after being cut and root readily. The flowers are notable for the contrast of the blue petals and yellow stamens.

2. Commelina erecta L.

Along rocky streams, often in dry situations; not common; High Island; Fourmile Run; Great Falls. June–Sept. N. Y. to Tex. (*C. virginica* of Ward's Flora.)

3. Commelina virginica L.

Frequent along margins of the Eastern Branch and Potomac. Aug.–Oct. Eastern U. S. (*C. erecta* of Ward's Flora; *C. hirtella* Vahl.)

23. PONTEDERIACEAE. Pickerel-weed Family.

Plants erect, 30–120 cm. tall; leaves large, arrow-shaped; flowers in spikes, bright blue. 1. **PONTEDERIA.**

Plants creeping or submerged; leaves linear or reniform; flowers in few-flowered spathes, blue, white, or yellow.........................2. **HETERANTHERA.**

1. PONTEDERIA L.

1. Pontederia cordata L. PICKEREL-WEED.

Abundant in marshes. June–Aug. Eastern U. S.

Plate 16 shows a colony in flower in a marsh near Dyke.

2. HETERANTHERA Ruiz & Pav.

Leaves reniform; plants creeping on mud; flowers white or pale blue. 1. **H. reniformis.**

Leaves linear, grasslike; plants submerged; flowers yellow..............2. **H. dubia.**

1. **Heteranthera reniformis** Ruiz & Pav. MUD PLANTAIN.

Tide flats and other muddy places or in shallow water; along the canal, Carberry Meadows; Eastern Branch; Hunting Creek. Aug. Eastern U. S. W. Ind., S. Amer.

2. **Heteranthera dubia** (Jacq.) MacM. WATER STAR-GRASS.

Quiet shallow water; in the canal, pools along the Potomac, and creek mouths. July–Sept. U. S., Cuba, Mex. (*Schollera graminea* A. Gray.)

24. JUNCACEAE. Rush Family.

Capsule many-seeded, 1–3-celled; placentæ parietal or axial; leaf sheaths open. 1. **JUNCUS.**

Capsule 3-seeded, 1-celled; placentæ basal; leaf sheaths closed.....2. **JUNCOIDES.**

1. JUNCUS L. RUSH.

Juncus repens Michx. has been found at Salisbury, Maryland, and may occur within our limits. It would come in the key next to *J. marginatus*, from which it is distinguished by its long perianth (6–10 mm. long) and its floating or ascending stems.

Leaves reduced to bladeless mucronate basal sheaths; leaf of the inflorescence seemingly continuous with the stem, the inflorescence therefore appearing lateral. Stems tall, erect, naked..1. **J. effusus.**
Leaves with well-developed grasslike blades; inflorescence clearly terminal.
  Leaves hollow, with cross partitions, appearing jointed when dry, usually terete.
    Seeds with a distinct whitish appendage ("tail") at each end.
      Seeds loosely covered by the seed coat, the latter prolonged into tails about as long as the body of the seed; inflorescence stiff..........12. **J. canadensis.**
      Seeds tightly covered by the seed coat, the latter honeycombed and prolonged into tails only about one-third as long as the seed body; inflorescence loose. 13. **J. subcaudatus.**
    Seeds not tailed, usually with short abrupt dark tips.
      Capsule prismatic, short-pointed..........................14. **J. acuminatus.**
      Capsule subulate, with long tapering apex.
        Perianth 4–5 mm. long, the flower heads (exclusive of the beaks of the capsules) 12–15 mm. in diameter; stamens 6; rootstocks slender, 1–2 mm. in diameter, bearing small tubers at intervals of a few centimeters. 10. **J. torreyi.**
        Perianth 2.5–3 mm. long, the flower heads (exclusive of the beaks of the capsules) 7–10 mm. in diameter; stamens 3; rootstocks stout, uniform, 2–3 mm. in diameter, even when young...............11. **J. scirpoides.**
  Leaves neither jointed nor with cross partitions, either channeled on the upper surface or flattened.
    Flowers crowded in 2–10-flowered heads, not prophyllate (see below).
      Heads rather few, mostly 5–10-flowered; stamens shorter than the petals, not conspicuous in fruit....................................8. **J. marginatus.**
      Heads very numerous, usually 2–5-flowered; stamens equaling or surpassing the petals, persistent and conspicuous in fruit................9. **J. aristulatus.**
    Flowers solitary along the branches of the inflorescence, prophyllate (that is, each subtended by two bracteoles in addition to the bractlets at base of pedicel).
      Plants annual; inflorescence, exclusive of its leaves, more than one-third the height of plant...2. **J. bufonius.**
      Plants perennial; inflorescence, exclusive of its leaves, less than one-third the height of plant.
        Sepals obtuse, green and dark brown, shorter than or barely equaling the dark brown capsule; stem usually bearing one or two leaves..3. **J. gerardi.**

Sepals very acute, pale green or straw-colored, equaling or exceeding the pale capsule; leaves all basal or essentially so.

Leaves subterete, merely channeled above; basal sheaths usually purplish-tinged; flowers 3.5–5 mm. long, in 1-sided racemes; leaf sheaths with short cartilaginous auricles (the narrow borders at the apex of the sheaths)..**7. J. dichotomus.**

Leaves flattened, but sometimes inrolled in drying so as to appear involute; basal sheaths brownish or straw-colored.

Auricles of the leaf sheaths cartilaginous, yellowish when dry. **4. J. dudleyi.**

Auricles of the leaf sheaths membranaceous or submembranaceous, whitish or brownish.

Auricles thin, scarious, whitish, 1–3 mm. long; flowers 3.5–5 mm. long, loosely scattered or clustered; inflorescence shorter than its lowest bract..**5. J. tenuis.**

Auricles firmer, brownish, less than 1 mm. long; flowers 2.5–3.5 mm. long, arranged in 1-sided racemes; inflorescence usually longer than its lowest bract..................................**6. J. secundus.**

1. Juncus effusus L. COMMON RUSH.

Meadows and wet places; rather common. June–Aug. N. Amer. and Eur.

The form occurring with us is *J. effusus solutus* Fern. & Wieg.

2. Juncus bufonius L. TOAD RUSH.

Dried-up pools and wet places; common. May–July. Cosmopolitan.

3. Juncus gerardi Loisel. BLACK GRASS.

Known only from streets of Alexandria, where first collected by Vasey. July. Nearly cosmopolitan.

Abundant, outside our limits, in the salt marshes of Chesapeake Bay.

4. Juncus dudleyi Wiegand.

Sandy bogs and damp sands; scarce; flats of the Potomac, southwest of Washington Monument (*Coville*); High Island and First Lock (*Ward*). May–June. Greater part of N. Amer.

5. Juncus tenuis Willd. PATH RUSH.

Abundant throughout in sandy soil; a characteristic plant along paths. June–Aug. N. Amer.; introd. and spreading in the Old World.

6. Juncus secundus Beauv.

Fairly common in sandy abandoned fields. June. Eastern N. Amer. (*J. tenuis secundus* Engelm.)

7. Juncus dichotomus Ell.

Low sandy ground and meadows; frequent, especially toward salt water. June–Sept. Eastern N. Amer.; trop. Amer.

8. Juncus marginatus Rostk.

Meadows and wet grounds; abundant. June–Sept. Eastern N. Amer. (Includes *J. marginatus vulgaris* of Ward's Flora.)

9. Juncus aristulatus Michx.

Frequent in grassy places. June–July. Eastern N. Amer., south to Mex. (*J. marginatus biflorus* of Ward's Flora; *J. marginatus aristulatus* Coville.)

10. Juncus torreyi Coville.

Damp sandy ground; scarce; vicinity of Washington (*Ward*); reservoir, Howard University, and Jackson City (*Steele*). July–Aug. Eastern N. Amer. (*J. nodosus megacephalus* Engelm.)

11. Juncus scirpoides Lam.

Wet sandy soil; common. July–Aug. Eastern N. Amer. (*J. scirpoides macrostemon* Engelm.)

1
2. Juncus canadensis J. Gay.
Meadows and wet grounds; frequent. Aug.–Oct. Eastern N. Amer.; S. Amer. (*J. canadensis longicaudatus* Engelm.)

13. Juncus subcaudatus (Engelm.) Coville & Blake.
Wet grounds; rather uncommon. July–Sept. Eastern N. Amer. (*J. canadensis subcaudatus* Engelm.)

14. Juncus acuminatus Michx.
Abundant in wet places. June–Sept. Eastern N. Amer.; Northwest Coast; Mex. (*J. acuminatus legitimus* Engelm.)

2. **JUNCOIDES** Adans. Wood-rush.

Perianth about equaling the capsule, 2–3 mm. long; base of plant bulblet-bearing; rays of the inflorescence mostly ascending............**1. J. campestre bulbosum.**
Perianth much exceeding the capsule, 2.8–4 mm. long; base of plant not bulblet-bearing; some of the rays strongly divergent.........**2. J. campestre echinatum.**

1. Juncoides campestre bulbosum (A. Wood) Coville & Blake. Bulbous wood-rush.
Apparently not as common in the District as the next. Apr.–May. Eastern N. Amer. (*Luzula campestris* of Ward's Flora, in part; *J. bulbosum* Small.)

2. Juncoides campestre echinatum (Small) Coville & Blake.
Apparently the common form of the District. Apr.–May. Eastern N. Amer. (*J. echinatum* Small.)

Much more collecting is required before the relative abundance of our two forms can be established. Material should be collected only in fairly ripe fruit.

25. MELANTHIACEAE. Bunch-flower family.

Flowers solitary, terminal or opposite the leaves; basal leaves undeveloped; capsule breaking midway between the septa; perianth lobes more than 1 cm. long. **7. UVULARIA.**
Flowers numerous, in a terminal inflorescence; plants with well-developed basal leaves; capsule opening at the septa; perianth lobes 1 cm. long or less.
  Flowers in racemes.
    Plants without bulbs; anthers oblong, 2-celled.
      Flowers perfect, in loose racemes, each flower with 3 bractlets; leaves linear. **1. TOFIELDIA.**
      Flowers dioecious, in spikelike racemes, not bracted; leaves oblanceolate. **2. CHAMAELIRIUM.**
    Plants with bulbs; anthers confluently one-celled. Flowers perfect, bracted. **3. CHROSPERMA.**
  Flowers in panicles. Anthers cordate, one-celled; inflorescence polygamo-monoecious.
    Plants glabrous, from a bulb; sepals lanceolate, broadest at the base. **4. STENANTHIUM.**
    Plants with pubescent stems, from a rootstock; sepals narrowed at the base.
      Perianth segments clawed; leaves long and narrow..**5. MELANTHIUM.**
      Perianth segments nearly sessile; leaves broadly oval..........**6. VERATRUM.**

1. **TOFIELDIA** Huds.

1. Tofieldia racemosa (Walt.) B. S. P. False bog asphodel.
Open swampy ground; region beyond Beltsville and Suitland; rare. July. Southern N. J. to Fla. (*T. pubens* Michx.)

2. **CHAMAELIRIUM** Willd.

1. Chamaelirium luteum (L.) A. Gray. Blazing star. Devil's-bit.
Moist hillsides in open woods; Rock Creek and upper Potomac regions; once found near the Reform School. May. Eastern U. S. (*C. carolinianum* Willd.)

The characteristic spatulate-leaved evergreen rosettes of this plant are conspicuous n winter.

3. CHROSPERMA Raf.

1. **Chrosperma muscaetoxicum** (Walt.) Kuntze. FLY POISON.

Rare, in dry or damp open woodland; Ammendale and Suitland. June. Southern states, north to Long. Isl. (*Amianthium muscaetoxicum* A. Gray.)

4. STENANTHIUM Kunth.

1. **Stenanthium gramineum** (Ker) Morong.

Local in swamps near Bladensburg, Terra Cotta, and Fourmile Run. July. Southern states, north to Pa. (*S. robustum* of Ward's Flora.)

5. MELANTHIUM L. BUNCH-FLOWER.

Blade of perianth segments oblong; leaves linear.................**1. M. virginicum.**
Blade of perianth segments orbicular; leaves oblanceolate...........**2. M. latifolium.**

1. **Melanthium virginicum** L.

Locally abundant in open swampy ground; Reform School, Falls Church, and other swampy regions. July. Eastern U. S.

2. **Melanthium latifolium** Desv.

Dry woods and hills; rare; open ground at Fort Myer; Pinehurst; Stubblefield. July. Conn. to S. C.

6. VERATRUM L.

1. **Veratrum viride** Ait. FALSE HELLEBORE.

Rare in swamps and bogs; Laurel; Hollywood Swamp; Lincolnia; Magnolia Run; Suitland. May. Northern states, south to Ga.

7. UVULARIA L. BELLWORT.

Leaves sessile; capsule acute at both ends.........................**1. U. sessilifolia.**
Leaves with bases united around the stem; capsule truncate at apex. **2. U. perfoliata.**

1. **Uvularia sessilifolia** L.

Common in woodlands; mostly below the fall line. Apr.–May. Northern states, south to Ga. (*Oakesia sessilifolia* S. Wats.)

The flowers are shown in plate 19A.

2. **Uvularia perfoliata** L.

Common in rich woodland; upper Potomac and Rock Creek regions; Marlboro. Early May. Eastern U. S.

26. LILIACEAE. Lily Family.

Among the cultivated genera of this family not included in this list may be mentioned: *Tulipa*, tulips; *Scilla*, squills; *Hyacinthus*, common hyacinths; *Yucca*, yucca. Hardy forms of some of the above genera are likely to be reported as escapes, but none seems to be definitely established.

Plants with bulbs or corms. Ovary superior.
  Flowers small, in umbels; plants with an onion-like or garlic-like odor. Perianth 6-parted; ovules 1 or 2 in a cell.................................**1. ALLIUM.**
  Flowers not in umbels; plants not with an onion odor.
    Plants tall, with a leafy stem and terminal inflorescence of large flowers; bulb of numerous fleshy scales...**2. LILIUM.**
    Plants low, with basal leaves and naked scape; bulb onion-like in structure. Flowers less than 4 cm. long.
      Flowers solitary, bractless; leaves two, broad...............**3. ERYTHRONIUM.**
      Flowers several; leaves several, narrow.
        Perianth of separate spreading segments; flowers green and white, bracted. **4. ORNITHOGALUM.**
        Perianth segments united, urn-shaped; flowers blue or white. **5. MUSCARI.**

Plants without bulbs or corms. Perianth segments partly united; roots fibrous or fleshy; plants with basal leaves.
  Ovary superior; flowers large, orange, clustered at the top of a leafless scape. **6. HEMEROCALLIS.**
  Ovary partly inferior; flowers small, whitish, borne in bracted racemes. **7. ALETRIS.**

1. ALLIUM L.

Allium cepa L., common onion, *A. sativum* L., European garlic, and *A. porrum* L., leek, are grown commonly and all persist more or less after cultivation.

Leaves oblong-lanceolate, absent at flowering time..................... **1. A. tricoccum.**
Leaves linear, present at flowering time.
  Inflorescence erect, usually with bulblets; bulb coats more or less fibrous; bulbs not attached to a rootstock.
    Leaves cylindric, hollow, extending half way up the scape; bract enveloping the umbel splitting down on one side only; bulb coat a thick fibrous shell.. **2. A. vineale.**
    Leaves flat, not extending up the stem much above ground; bract inclosing the umbel splitting into 3 parts; bulb coat fibrous-reticulate... **3. A. canadense.**
  Inflorescence nodding, without bulblets; bulb coats membranous; bulbs attached in clusters to a short rootstock. Leaves flat.................... **4. A. cernuum.**

1. Allium tricoccum Ait. WILD LEEK.

Along the Potomac above High Island; rare. Northeastern U. S., south to N. C.

The leaves of this interesting species appear in spring but wither before the flowers appear in July.

2. Allium vineale L. WILD GARLIC.

Generally distributed as a weed throughout the region. Northeastern U. S., south to Va.; naturalized from Eur.

The leaves remain green through the winter.

3. Allium canadense L. MEADOW GARLIC.

Frequent in rich woodlands. June. Eastern U. S.

This species can be distinguished by its solitary bulb with netlike fiber coat. The leaves are not evergreen.

4. Allium cernuum Roth. WILD ONION.

Common in rock crevices and rich soil along the Potomac from Chain Bridge upward. July. Throughout the U. S.

Leaves evergreen.

2. LILIUM L. LILY.

Many species of *Lilium* are in cultivation as ornamentals. The tiger lily (*L. tigrinum* L.) spreads from gardens and often persists along fences.

Flowers erect; sepals long-clawed, red, scarcely recurved ...... **1. L. philadelphicum.**
Flowers nodding or spreading; sepals not clawed, orange or yellow, recurved.
  Leaves smooth; sepals strongly recurved, purple-spotted........... **2. L. superbum.**
  Leaves roughened on margins and on veins beneath; sepals moderately recurved, brown-spotted .... **3. L. canadense.**

1. Lilium philadelphicum L. WOOD LILY.

Rare in dry woodlands; Potomac region above the fall line. July. Northeastern U. S., south to N. C.

2. Lilium superbum L. TURK'S-CAP LILY.

Common in meadows and marshlands northeast of Washington. July. Northeastern U. S., south to N. C.

3. Lilium canadense L. CANADA LILY.

Rare in wet soil; Bethesda to Terra Cotta. July. Eastern U. S.

3. ERYTHRONIUM L. TROUT LILY.

The plants of this genus are often called adder's-tongue, or dog-tooth violet.

Flowers yellow; stigmas short, clublike..........................**1. E. americanum.**
Flowers white; stigmas 2–3 mm. long, recurved......................**2. E. albidum.**

1. Erythronium americanum Ker. TROUT LILY.

Common in moist woodlands. Apr. Eastern U. S.

Sometimes the flowers are deeply tinged with brownish red. The flowers are shown in plate 17B.

2. Erythronium albidum Nutt. WHITE TROUT LILY.

Locally common in moist woodlands along the Potomac above Little Falls. Apr. A plant of the Mississippi Valley, extending east in the Potomac Basin to Washington; also in N. Y. and Ga.

4. ORNITHOGALUM L. STAR OF BETHLEHEM.

Flowers in corymbs, erect; pedicels long, slender.................**1. O. umbellatum.**
Flowers in racemes, drooping; pedicels short, stout......................**2. O. nutans.**

1. Ornithogalum umbellatum L.

Locally common in fields and waste places. May. Northeastern U. S., south to Va. Introduced from Eur.

2. Ornithogalum nutans L.

Rare in waste places. Apr. Eastern U. S. Escaped from gardens; native of Eur.

Both species are reported as weeds in Maryland.

5. MUSCARI Mill. GRAPE HYACINTH.

Perianth oblong, urn-shaped, 4–6 mm. long; leaves narrow, 2–4 mm. wide, recurved.
1. M. racemosum.
Perianth globose, 2–3 mm. long; leaves broader, 4–8 mm. wide, erect.
2. M. botryoides.

1. Muscari racemosum (L.) Mill.

Frequent northwest of Washington in rich soil as a garden escape; well established along the Potomac. Apr. Northeastern U. S.; native of southern Eur.

2. Muscari botryoides (L.) Mill.

Two collections from Plummers Island. Naturalized from Eur. in the eastern U. S.

This species may be more plentiful around Washington, as *M. racemosum* has been confused with it and few collections made of either.

6. HEMEROCALLIS L.

1. Hemerocallis fulva L. ORANGE DAY LILY.

Waste land, meadows, and along streams throughout our region. July. Eastern U. S., as an escape from cultivation; native of Eur. and Asia.

The clustered roots have peculiar fleshy swellings which serve as storage organs.

Hemerocallis flava, the yellow day lily, is common in parks and gardens.

7. ALETRIS L. COLIC-ROOT.

Flowers 7–10 mm. long, white or yellowish white ....**1. A. farinosa.**
Flowers about 5 mm. long, bright yellow ....**2. A. aurea.**

1. Aletris farinosa L.

Locally common in dry open pine scrub and on sterile hillsides mostly below the fall line; also in bogs. June. Eastern U. S.

The rosettes are evergreen and even persist on burnt-over land where the dead cover was sparse.

2. Aletris aurea Walt.

Near Laurel, July 14, 1918 (*McAtee*). In sandy soil, Md. to Tex.

27. CONVALLARIACEAE. Lily-of-the-valley Family.

The lily-of-the-valley, *Convallaria majalis* L., is commonly cultivated and tends to persist along garden fences. It occurs as a native plant in the high mountains of Virginia and North Carolina, though our cultivated stock is of European origin.

Flowers dioecious; leaves scalelike; plant tall, much branched. Filiform leaflike branches (cladodes) clustered in axils of upper leaf scales...**1. ASPARAGUS.**
Flowers perfect; leaves present, broad; stems simple.
  Leaves alternate.
    Perianth segments separate; flowers in terminal racemes or panicles.
      Perianth segments 6..**2. VAGNERA.**
      Perianth segments 4..**3. UNIFOLIUM.**
    Perianth segments united; flowers axillary, solitary or in small clusters. **4. POLYGONATUM.**
  Leaves whorled below the flowers.
    Leaves in two whorls; perianth segments essentially similar......**5. MEDEOLA.**
    Leaves in one whorl of three; outer perianth segments green, the inner purple or whitish..**6. TRILLIUM.**

1. ASPARAGUS L.

1. Asparagus officinalis L. ASPARAGUS.

Frequent as an escape from cultivation; waste places and sandy banks of streams. The cultivated asparagus is a native of southwestern Asia, but is easily established as a permanent member of the flora in any arable region of the United States.

The rudimentary ovaries of the staminate plant suggest a perfect flower, but they never set seed.

2. VAGNERA Adans. FALSE SOLOMON'S-SEAL.

Flowers numerous, on very short pedicels in a terminal panicle; stamens longer than the small (2 mm.) perianth segments; rootstock stout, fleshy; leaves ciliate, somewhat petioled..**1. V. racemosa.**
Flowers few, on longer solitary pedicels in a simple raceme; stamens shorter than the longer (4–5 mm.) perianth segments; rootstock slender, long-creeping; leaves clasping, glabrous...**2. V. stellata.**

1. Vagnera racemosa (L.) Morong.

Frequent in moist woods and thickets. May. Throughout most of the U. S. (*Smilacina racemosa* Desf.)

2. Vagnera stellata (L.) Morong.

Rare in moist woodland; Chain Bridge, Difficult Run, and islands of the Potomac. May. Northern N. Amer. and Eur. (*Smilacina stellata* Desf.)

3. UNIFOLIUM Adans.

1. Unifolium canadense (Desf.) Greene. WILD OR FALSE LILY-OF-THE-VALLEY.

Locally common in swamps below the fall line, especially beyond Hyattsville. May. Northern U. S., south to N. C. (*Maianthemum canadense* Desf.)

4. POLYGONATUM Adans. SOLOMON'S-SEAL.

Flowers yellowish; free part of the filament smooth, longer than the anther. **1. P. biflorum.**
Flowers green; free part of the filament granular or papillose, shorter than the anther. Fruit greenish black..**2. P. giganteum.**

1. Polygonatum biflorum (Walt.) Ell.

Moist or dry woodlands; common. May. Eastern U. S. (*Salomonia biflora* Farwell.)

2. Polygonatum giganteum Dietr.

Islands of the Potomac. May. Pa. and Md. to Mont.

A large plant, up to 1.5 meters high.

5. MEDEOLA L.

1. Medeola virginiana L. CUCUMBER ROOT.

Frequent in moist woods and thickets generally. May. Eastern U. S.

The odor of the fleshy root suggests cucumbers. The upper whorl of leaves becomes purple and red when the fruit ripens. Known also as Indian cucumber.

6. TRILLIUM L. WAKE-ROBIN.

1. Trillium sessile L.

Locally common in rich moist woodland above Little Falls on the shores and islands of the Potomac. Apr.–May. Eastern U. S.

The forms with purple flowers and with green flowers are otherwise identical; the latter is *T. sessile luteum* Muhl. The purple-flowered form is shown in plate 18B.

28. SMILACACEAE. Smilax Family.

1. SMILAX L. GREENBRIER.

Aerial shoots herbaceous, spineless, less than 3 meters high; underground stems slow-growing, knotted and woody, never with long creeping rootstocks; flowers carrion-scented; ovules 2 in a cell.
  Anthers equaling the filaments; peduncles usually more than one at a node; leaves often hastate, pale and glaucous beneath, glabrous............**1. S. tamnoides.**
  Anthers shorter than the filaments; peduncles never more than one at a node; leaves never hastate.
    Leaves glabrous and glaucous beneath..........................**2. S. herbacea.**
    Leaves puberulent and green beneath..........................**3. S. pulverulenta.**
Aerial shoots woody, armed with spines, at least on the main stems, usually high-climbing; flowers not carrion-scented; ovules solitary in each cell.
  Underground stems short, slow-growing, without long creeping rootstocks; plants not at all glaucous; spines slender, black, straight, numerous below; berries black, usually one-seeded....................................**4. S. hispida.**
  Underground stems with long creeping rootstocks; at least the flowers and fruit glaucous; spines stout; berries blue-black, usually 3-seeded.
    Stem and leaves not glaucous; leaves deciduous; spines heavy, straight, never at nodes and fewer at base of stems; stems green (drying yellowish). **5. S. rotundifolia.**
    Stem and leaves glaucous; leaves more or less evergreen; spines strong, recurved, usually at nodes and more numerous at base of stem; stems dark. **6. S. glauca.**

1. Smilax tamnoides L.

Swamps and wet woods; common northeast of Washington, Eastern Branch region. June–July. Southeastern U. S. (*S. tamnifolia* of Ward's Flora.)

This species can be recognized by its yellowish green color, thicker leaves, and 1–3-seeded berries. The occurrence of more than one peduncle at a node is an interesting difference between this and the other species.

2. Smilax herbacea L. CARRION FLOWER.

Open wooded rocky slopes; frequent in Great Falls region and in swamps of the Eastern Branch. June–July. Northeastern U. S., south in the mountains to N. C.

3. **Smilax pulverulenta** Michx.

Moist woodland; common in the upper Potomac and Rock Creek regions. May. Central Atlantic states, west to Ohio Valley.

Easily distinguished from *S. herbacea* by the pulverulent pubescence on the under surface of the leaves, which lack the glaucous coat. The common Potomac River form.

4. **Smilax hispida** Muhl. GREENBRIER.

Moist rich woodland; common in the upper Potomac and Rock Creek regions. May. Eastern U. S.

This is the largest greenbrier of the region Its green leaves persist well into late autumn. It does not spread rapidly underground like the other woody forms and entirely lacks any glaucous coat. Even normally one-seeded berries are green-black. (*S. pseudo-china* of Ward's Flora contained the larger plants of *S. hispida*. The tubers Ward refers to were not from *Smilax*, as this species does not have tubers.)

5. **Smilax rotundifolia** L. HORSEBRIER.

Common everywhere. May. Eastern U. S.

6. **Smilax glauca** L. CATBRIER.

Common everywhere. May–June. Eastern U. S.

This species often has tubers on the spiny rootstocks.

29. AMARYLLIDACEAE. Amaryllis Family.

This family contains numerous cultivated forms grown as greenhouse and outdoor ornamentals, such as *Narcissus* of several species among which are the daffodils, jonquils, narcissus, etc. (*N. biflorus* has been collected as an escape, but probably was a persistent garden bulb); *Polianthes tuberosa*, the tuberose; *Agave*, century plants; and *Hippeastrum*, the so-called amaryllis of the trade.

1. HYPOXIS L. STAR-GRASS.

1. **Hypoxis hirsuta** (L.) Coville.

Frequent in grassland. May. Eastern U. S. (*H. erecta* L.)

This grasslike plant is recognized by its yellow starlike flowers, and its fleshy corm about 1 cm. thick.

30. DIOSCOREACEAE. Yam Family.

1. DIOSCOREA L. YAM.

Lower leaves in whorls of 4–7; leaves glaucous beneath when mature, usually hirtellous with sparsely scattered hairs, sometimes almost glabrous............**1. D. glauca.**

Lower leaves alternate, or the three lowest close together or indefinitely whorled; leaves pubescent beneath.....................................**2. D. villosa.**

1. **Dioscorea glauca** Muhl. WILD YAM.

Thickets or open woods, climbing over shrubs; common. Eastern U. S.

This is the wild yam of commerce; its thick, much-branched, irregular rootstock is the source of the drug dioscorea.

2. **Dioscorea villosa** L.

Moist or low thickets; infrequent. Conn. to Md. and westward to Okla.

Rootstocks long and slender, simple or rarely branched; inflorescence densely many-fruited.

31. IRIDACEAE. Iris Family.

This family contains many ornamental species in common cultivation, *Crocus*, *Freesia*, and *Gladiolus* being well-known genera. Species of *Crocus* tend to persist in old lawns and gardens.

Flowers large, more than 4 cm. long; leaves broad.
  Flowers yellow or blue; seeds dry; style branches opposite the anthers, broad, petal-like........1. **IRIS.**
  Flowers orange; seeds fleshy; style branches alternate with the anthers, slender-filiform........2. **GEMMINGIA.**
Flowers small, less than 2 cm. long; leaves grasslike. Style branches alternate with the anthers, filiform........3. **SISYRINCHIUM.**

1. IRIS L.

Stems tall, leafy, usually several-flowered, more or less branching; perianth tube much shorter than the sepals, these larger than the petals and not crested.
  Flowers blue........1. **I. versicolor.**
  Flowers yellow........2. **I. pseudacorus.**
Stems low, 20 cm. high or less, 1–3-flowered; perianth tube long and slender, the violet-blue sepals and petals nearly equal.
  Leaves lanceolate; sepals crested........3. **I. cristata.**
  Leaves linear; sepals not crested........4. **I. verna.**

1. **Iris versicolor** L. BLUE FLAG.
Open swamps and bogs. May. Eastern N. Amer.
The flowers are shown in plate 19B.

2. **Iris pseudacorus** L. YELLOW FLAG.
Established along the Potomac marshes below Washington. May. A local escape from cultivation throughout the eastern U. S.; native of Eur.

3. **Iris cristata** Ait. CRESTED IRIS.
Stream margins and low wet woodland; along the Potomac above Washington; rare. May. Southeastern U. S., north to Md.
A plant in flower is shown in plate 15B.

4. **Iris verna** L. SPRING IRIS.
Dry sandy woods near swamps; locally abundant in one or more localities, Bladensburg to Ammendale. May. Southeastern U. S., north to Pa.

Many cultivated species and hybrids of *Iris* are found in gardens. *I. germanica* L. and others tend to persist in old gardens and dumps.

2. GEMMINGIA Fabr.

1. **Gemmingia chinensis** (L.) Kuntze. BLACKBERRY LILY.
Escaped from cultivation along roadsides and fences, preferring rich, well-drained soil. July. Naturalized from Asia in the eastern U. S. (*Pardanthus chinensis* Ker.)
When the capsule dehisces the mass of black fleshy seeds suggests a large blackberry.

3. SISYRINCHIUM L. BLUE-EYED GRASS.

Stems simple, with a terminal sessile spathe, narrowly wing-margined, drying green. 1. **S. mucronatum.**
Stems branched, or if simple broadly winged.
  Stems broadly winged.
    Stems either simple or branched; plants drying green......2. **S. intermedium.**
    Stems branched above, bearing two or more pedicellate spathes; plants darkening in drying. Pedicels spreading or recurved........3. **S. gramineum.**
  Stems narrowly winged; pedicels not recurved; plants not darkening in drying. 4. **S. atlanticum.**

1. Sisyrinchium mucronatum Michx.

Meadows and fields; common north and west of Washington. May. Northeastern U. S., south to Va.

Distinguished from the other species by its sessile spathes.

2. Sisyrinchium intermedium Bicknell.

Low wet soil along the Potomac and Rock Creek; rare. May. Central Atlantic states.

This doubtful species is included on Bicknell's identification. It is perhaps a form of *S. mucronatum.*

3. Sisyrinchium gramineum Curtis.

Wet meadows and damp woods; frequent. May–June. Eastern U. S. (*S. anceps* of Ward's Flora; *S. graminoides* Bicknell.)

This species can be readily recognized by the black color it takes when wilted.

4. Sisyrinchium atlanticum Bicknell.

In or near marshes; common northeast of Washington. May–June. Atlantic Coast Region.

32. ORCHIDACEAE. Orchis Family.

Inflorescence a spirally twisted spike. Flowers white or greenish white. **9. IBIDIUM.**

Inflorescence not spirally twisted.

Leaves not present (or if present much withered) at flowering time.

Roots coral-like; plants without green coloring matter; leaves reduced to brownish sheaths.................................... **13. CORALLORRHIZA.**

Roots not coral-like; plants with green coloring matter, producing a leaf in the fall, this persisting throughout the winter, but usually withering before flowering time.

Leaf plaited, green on both sides or sometimes purplish beneath near the base, turning brown in withering; scape bracted, purplish, appearing in May; lip not spurred.................................... **16. APLECTRUM.**

Leaf smooth, green above and purple beneath, turning bright scarlet in withering; scape bractless, straw-colored, appearing in July; lip spurred. **17. TIPULARIA.**

Leaves present (fresh and green) at flowering time.

Leaf only one (bract sometimes leaflike in *Pogonia*).

Leaf elliptic or ovate, borne near the middle of the stem.

Flowers solitary, or rarely two, in the axil of a large bract, rosy pink or white; plants growing in bogs.................................... **4. POGONIA.**

Flowers many, small, in a short raceme with minute bracts, greenish yellow; plants growing in woods.................................... **14. MALAXIS.**

Leaf linear-lanceolate, basal.

Flower solitary; perianth segments close together, rosy purple; lip pendent; plant 15–30 cm. tall, flowering in May.................... **8. ARETHUSA.**

Flowers several; perianth segments spreading, rosy pink; lip erect; plant 20–45 cm. tall, flowering in July...................... **7. LIMODORUM.**

Leaves more than one (rarely only one in *Habenaria* and *Orchis*).

Stem leafy only at the base.

Flower solitary, large. Lip a moccasin-shaped sac, divided down the middle. **1. CYPRIPEDIUM.**

Flowers more than one.

Inflorescence spikelike; lip saccate; leaves several, white-netted, thick, remaining green through the winter. Flowers greenish white. **11. PERAMIUM.**

Inflorescence racemose; lip not saccate; leaves usually two, not white-netted nor evergreen.
  Bracts longer than the flowers; perianth united into a magenta-pink hood, the lip white; leaves elliptic, dark green; plants of low rich woods..2. **ORCHIS.**
  Bracts minute; flowers greenish yellow or madder-purple; leaves ovate, light green; plants of dry woods or damp rocky ravines. 15. **LIPARIS.**

Stem leafy above the base.
 Leaves opposite or whorled.
  Leaves a single pair near the middle of the stem; flowers in a slender raceme, small, greenish..............................12. **OPHRYS.**
  Leaves usually 5 in a whorl at the top of the stem; flowers one or two, large, madder-purple................................5. **ISOTRIA.**
 Leaves alternate.
  Flowers few, not in racemes.
   Leaves large, plaited; flowers large, the lip a pink or yellow inflated sac. 1. **CYPRIPEDIUM.**
   Leaves small, not plaited; flowers small, the lip not saccate. 6. **TRIPHORA.**
  Flowers many, in racemes.
   Lip saccate, not spurred; flowers madder-purple; basal leaves conspicuously nerved, broadly ovate, reducing upward to lanceolate bracts.......................................9. **SERAPIAS.**
   Lip not saccate, spurred; flowers not madder-purple; leaves not conspicuously nerved, all lanceolate..................3. **HABENARIA.**

1. CYPRIPEDIUM L. LADY'S-SLIPPER.

Leaves two, at the base of the stem; lip rosy purple, the opening linear..1. **C. acaule.**
Leaves several, borne on the stem; lip yellow, the opening round and open. 2. **C. parviflorum.**

1. Cypripedium acaule Ait. MOCCASIN FLOWER.

Bogs, rich woods, or dry pine hills. May. Eastern N. Amer. (*Fissipes acaulis* Small.)

Nearly white forms are found occasionally, especially in bogs. A plant in flower is shown in plate 20B.

2. Cypripedium parviflorum Salisb. YELLOW LADY'S-SLIPPER.

Banks of ravines or rich woods. May. Northern and eastern N. Amer. (*C. hirsutum* of Britton's Manual.)

The large-flowered form (*C. pubescens* Willd.) is not so common in our region as is the typical small-flowered form.

Cypripedium hirsutum Mill. was reported from our region by Brereton. (*C. spectabile* Salisb.; *C. reginae* Walt.)

2. ORCHIS L.

1. Orchis spectabilis L. SHOWY ORCHIS.

Low rich woods. May. Eastern U. S. (*Galeorchis spectabilis* Rydb.)

Sometimes found with only one leaf developed, which would place these plants in the related species, *O. rotundifolia* Banks, in most manual keys. Our species has large bracts longer than the flowers, while *O. rotundifolia* has very small bracts. Plants in flower are shown in plate 20A.

3. HABENARIA Willd.

Lip not fringed nor deeply lobed; racemes narrow; flowers small and greenish.
  Lip hastate, with a tubercle in the center at the base; spur slender, straight. **1. H. flava.**
  Lip 3-toothed at the apex, not tubercled at the base; spur clavate, curved. **2. H. clavellata.**
Lip fringed or deeply lobed; racemes broad; flowers large and showy.
  Lip fringed but not lobed.
    Flowers orange-yellow.
      Lip ovate, about 5 mm. long; spur about half as long as the ovary. **3. H. cristata.**
      Lip oblong, about 10 mm. long; spur longer than the ovary……**4. H. ciliaris.**
    Flowers white……**5. H. blephariglottis.**
  Lip deeply 3-lobed.
    Flowers greenish white; lobes of the lip lacerate-fringed……**6. H. lacera.**
    Flowers violet-purple; lobes of the lip cut-toothed, not fringed. **7. H. peramoena.**

1. **Habenaria flava** (L.) A. Gray.
Moist meadows. June. Eastern U. S. (*H. virescens* Spreng.; *Perularia flava* Farwell.)

2. **Habenaria clavellata** (Michx.) Spreng.
Bogs, usually in shade. July. Eastern U. S. (*H. tridentata* Hook.; *Gymnadeniopsis clavellata* Rydb.)

3. **Habenaria cristata** (Michx.) R. Br.
Known from only one locality, a bog near Suitland. Southern states, north to N. J. (*Blephariglottis cristata* Raf.)

4. **Habenaria ciliaris** (L.) R. Br. YELLOW FRINGED ORCHIS.
Bogs, usually in open places. July–Aug. Eastern U. S. (*Blephariglottis ciliaris* Rydb.)
A pale form has been found several times in the vicinity of Hyattsville.

5. **Habenaria blephariglottis** (Willd.) Torr. WHITE FRINGED ORCHIS.
Bogs, usually with the last species. July–Aug. (*Blephariglottis blephariglottis* Rydb.)

6. **Habenaria lacera** (Michx.) R. Br. RAGGED FRINGED ORCHIS.
Fairly common in damp meadows. June. Eastern U. S. (*Blephariglottis lacera* Farwell.)

7. **Habenaria peramoena** A. Gray. PURPLE ORCHIS.
Ditches and wet meadows. July–Aug. N. J. to Mo. and Ala. (*Blephariglottis peramoena* Rydb.)
Our handsomest orchid.

4. POGONIA Juss.

1. **Pogonia ophioglossoides** (L.) Ker. ROSE POGONIA.
Bogs. June. Eastern U. S.
Flowers occasionally almost white; fragrance delicate and delightful.
Pogonia divaricata (L.) R. Br. is listed by Brereton.

5. ISOTRIA Raf.

1. **Isotria verticillata** (Willd.) Raf.

Low rich woods. May–June. Eastern U. S. (*Pogonia verticillata* Nutt.)

Sometimes confused with *Medeola virginiana*, which has a flocculent-woolly green stem, while *Isotria* has a glabrous purple stem. This species has the reputation of disappearing from its usual haunts for several years in succession and then reappearing. Its coloring is very highly protective.

6. TRIPHORA Nutt.

1. **Triphora trianthophora** (Swartz) Rydb.

Low rich woods along the Potomac. Eastern U. S. (*Pogonia trianthophora* B. S. P.; *P. pendula* Lindl.)

While possibly not our rarest orchid, this little plant is certainly the hardest to find.

7. LIMODORUM L.

1. **Limodorum tuberosum** L. GRASS-PINK.

Bogs; usually associated with *Pogonia ophioglossoides*. Eastern U. S. (*Calopogon pulchellus* R. Br.)

Pale, nearly white forms are occasionally found. Strikingly peculiar in having the lip erect, while all our other orchids have pendent lips.

8. ARETHUSA L.

1. **Arethusa bulbosa** L. ARETHUSA.

Gravel bogs near Suitland and Hyattsville; rare. May. Eastern N. Amer.

9. SERAPIAS L.

1. **Serapias helleborine** L.

Our only introduced orchid, well established in the Soldier's Home woods, probably persisting from the planting around some old homestead. July. Native of Europe. (*Epipactis viridiflora* Reichenb.)

10. IBIDIUM Salisb. LADIES'-TRESSES.

Flowers in several ranks.
  Lip quadrate, yellowish; lower leaves oblong-lanceolate.......1. **I. plantagineum.**
  Lip oblong-ovate, white or greenish white; leaves all narrowly lanceolate.
    Flowers only slightly fragrant, apparently arranged in four vertical rows; bracts curved, shorter than the flowers; plants not stoloniferous.......2. **I. cernum.**
    Flowers decidedly fragrant, in evident spiral rows; bracts erect, equaling or exceeding the flowers; plants producing stolons sometimes 10 cm. long. 3. **I. odoratum.**
Flowers in one rank.
  Leaves persistent, lanceolate..................................4. **I. vernale.**
  Leaves soon withering, ovate.
    Roots fascicled; lip green, with white margin; flowering in July.......5. **I. gracile.**
    Root usually solitary; lip all white; flowering in September..........6. **I. beckii.**

1. **Ibidium plantagineum** (Raf.) House.

Flats below Chain Bridge. May. Northern states, south to Va. (*Spiranthes lucida* Ames; *S. latifolia* Torr.; *Gyrostachys plantaginea* Britton.)

2. **Ibidium cernuum** (L.) House.

Wet meadows and margins of bogs. Sept. Eastern U. S. (*Spiranthes cernua* L. Rich.; *Gyrostachys cernua* Kuntze.)

3. **Ibidium odoratum** (Nutt.) House. FRAGRANT LADIES'-TRESSES.

Swamps; Alexandria and Dyke. Sept. Along the coast, Va. to Tex. (*Spiranthes odorata* Lindl.; *Gyrostachys odorata* Kuntze.)

The stolons spread out under water from the base of the plant for several inches and end in a large green bud at the surface.

4. **Ibidium vernale** (Engelm. & Gray) House.

Dry meadows. July. Eastern U. S. (*Spiranthes vernalis* Engelm. & Gray.)

5. **Ibidium gracile** (Bigel.) House.

Open meadows in dry pine and oak woods. July–Aug. Eastern U. S. (*Spiranthes gracilis* Beck; *Gyrostachys gracilis* Kuntze.)

6. **Ibidium beckii** (Lindl.) House.

Open meadows and dry woods. Aug.–Sept. Coastal Plain, Mass. to Tex. (*Spiranthes beckii* Lindl.; *S. simplex* A. Gray; *Gyrostachys simplex* Kuntze.)

11. PERAMIUM Salisb. RATTLESNAKE PLANTAIN.

1. **Peramium pubescens** (Willd.) MacM.

Pine and oak woods. Aug. Eastern U. S. (*Goodyera pubescens* R. Br.; *Epipactis pubescens* A. A. Eaton.)

There is a specimen of *Peramium ophioides* (Fernald) Rydb. in the herbarium labeled "N. W. Branch, Sept. 28," but the data are regarded as doubtful.

12. OPHRYS L. TWAYBLADE.

1. **Ophrys australis** (Lindl.) House.

Bladensburg Swamp. May. N. Y. to La. (*Listera australis* Lindl.)

13. CORALLORRHIZA R. Br. CORAL-ROOT.

Lip with a small lobe on each side at the base........................**1. C. maculata.**
Lip not lobed at the base.
  Lip denticulate, long-clawed; plant flowering in May............**2. C. wisteriana.**
  Lip notched at the apex, short-clawed; plant flowering in August. **3. C. odontorhiza.**

1. **Corallorrhiza maculata** Raf.

Medium rich oak woods. Aug.–Sept. Throughout the U. S. (*C. multiflora* Nutt.)

2. **Corallorrhiza wisteriana** Conrad.

Apparently confined to rich woods along the Potomac. May. Eastern U. S.

3. **Corallorrhiza odontorhiza** (Willd.) Nutt.

Medium rich woods, often under beech. Eastern U. S.

14. MALAXIS Soland. ADDER'S-MOUTH.

1. **Malaxis unifolia** Michx.

Along runs in ravines of dry woods. July. Eastern U. S. (*Microstylis ophioglossoides* Nutt.; *Achroanthes unifolia* Raf.)

15. LIPARIS L. Rich. TWAYBLADE.

Lip wedge-obovate, purple..**1. L. liliifolia.**
Lip oblong-ovate, yellowish green....................................**2. L. loeselii.**

1. **Liparis liliifolia** (L.) L. Rich.

Medium rich oak woods. June. Eastern U. S. (*Leptorchis liliifolia* Kuntze.)

2. **Liparis loeselii** (L.) L. Rich.

Rocky ravines and rich woods. June. Northern states, south to Md. (*Leptorchis loeselii* MacM.)

16. APLECTRUM Torr.

1. **Aplectrum hyemale** (Muhl.) Torr. Putty-root.
Rich woods. May–June. Northern and eastern N. Amer. (*A. spicatum* B. S. P.)

17. TIPULARIA Nutt. Crane-fly orchis.

1. **Tipularia unifolia** (Muhl.) B. S. P.
Medium rich oak woods. July–Aug. Eastern U. S. (*T. discolor* Nutt.)

33. SAURURACEAE. Lizard's-tail Family.

1. SAURURUS L.

1. **Saururus cernuus** L. Lizard's-tail.
Swamps and shallow water; common. June–Aug. Eastern U. S.

A rather showy tall plant with heart-shaped leaves and long slender recurved spikes of small white flowers. It has a ginger-like odor. A characteristic colony of plants is shown in plate 21.

34. SALICACEAE. Willow Family.

Bracts of the catkins entire or obscurely toothed; stamens few (1–10); stigmas short; bud scale 1; leaves much longer than broad..........................**1. SALIX.**

Bracts deeply and sharply toothed; stamens numerous; stigmas elongate; bud scales several; leaves broad, often as broad as long................**2. POPULUS.**

1. SALIX L. Willow.

The following species are often cultivated, and isolated individuals may be found in waste places: *Salix purpurea* L., *S. pentandra* L., and *S. caprea* L.

KEY TO SPECIMENS WITH CATKINS.

Catkins stalked, appearing with the leaves or after them; capsule glabrous (hairy when young in *S. interior*).

Catkins appearing long after the leaves, often clustered, terminating long leafy twigs. Leaves linear or broadly linear, remotely and minutely toothed, green on both sides, more or less hairy when young; stamens 2; shrub. **1. S. interior.**

Catkins appearing with the leaves, solitary, terminating short leafy stalks.

Scales of the catkins brown, at least at the tip, persistent; filaments glabrous. Catkins nearly sessile; leaves lanceolate or broadly lanceolate, closely serrate, glabrous, pale beneath; shrub.........................**7. S. cordata.**

Scales pale yellow, deciduous; filaments hairy.

Stamens 3–7; pedicels 1–3 mm. long; shrubs or small trees.

Leaves narrowly lanceolate, green on both sides...................**2. S. nigra.**

Leaves broader, glaucous beneath............................**3. S. wardi.**

Stamens 2; pedicels less than 1 mm. long; trees. Leaves lanceolate, glaucous beneath.

Twigs long, pendulous, tough. Capsule nearly sessile; leaves linear-lanceolate, glabrous, minutely serrate.......................**6. S. babylonica.**

Twigs short, not pendulous, fragile at the base.

Capsule short-pediceled; leaves glabrous or nearly so, coarsely serrate; petioles glandular.................................**4. S. fragilis.**

Capsule sessile; leaves usually silky, even in age, finely serrate; petioles scarcely glandular...................................**5. S. alba.**

Catkins sessile, appearing before the leaves; capsule pubescent or woolly. Scales of the catkins black, long-hairy.

Catkins slender; capsule 3-4 mm. long, silvery-pubescent; leaves silvery-silky and glaucous beneath; treelike shrub..............................**8. S. sericea.**

Catkins stout; capsule 6-8 mm. long, woolly; leaves oblanceolate, woolly beneath; low shrubs.

Catkins oval-oblong, 1–3 cm. long; leaves broadly oblanceolate, 5-8 cm. long; shrub 1 meter high or more....................................**9. S. humilis.**

Catkins nearly spherical, 0.5–1.5 cm. long; leaves narrowly oblanceolate, 2-5 cm. long; shrub about 0.5 meter high.........................**10. S. tristis.**

KEY TO SPECIMENS WITH LEAVES ONLY.

Leaves glabrous when fully grown.

Leaves green on both sides.

Leaves linear or broadly linear, remotely and minutely toothed...**1. S. interior.**

Leaves narrowly lanceolate, closely serrate...........................**2. S. nigra.**

Leaves pale or glaucous beneath.

Twigs long, slender, pendulous; leaves linear-lanceolate, minutely serrate. **6. S. babylonica.**

Twigs short, not pendulous; leaves lanceolate.

Stipules very small, inconspicuous, early deciduous.

Petioles glandular; leaves coarsely serrate...................**4. S. fragilis.**

Petioles usually without glands; leaves finely serrate..............**5. S. alba.**

Stipules large, conspicuous, usually persistent, especially on young shoots.

Leaves narrowly lanceolate, very glaucous beneath..............**3. S. wardi.**

Leaves broadly lanceolate, slightly glaucous beneath..........**7. S. cordata.**

Leaves hairy when fully grown.

Leaves silvery-silky beneath or on both sides.

Leaves linear or broadly linear, remotely and minutely serrate.....**1. S. interior.**

Leaves lanceolate, closely serrate.

Twigs fragile; leaves thinly or closely silky on both sides; introduced tree. **5. S. alba.**

Twigs not fragile; leaves thinly silky beneath; native shrub......**8. S. sericea.**

Leaves gray-tomentose, especially beneath.

Leaves broadly oblanceolate, 5–8 cm. long........................**9. S. humilis.**

Leaves narrowly oblanceolate, 3–5 cm. long.......................**10. S. tristis.**

1. Salix interior Rowlee. SANDBAR WILLOW.

Along the upper Potomac. Apr.–May. Eastern N. Amer. (*S. longifolia* Muhl.)

2. Salix nigra Marsh. BLACK WILLOW.

Along streams; common. Apr.–May. Widely distributed in N. Amer. (*S. nigra falcata* Torr.)

A hybrid between this and *S. wardi* has been found along the canal near High Island.

3. Salix wardi Bebb. WARD'S WILLOW.

Rocky banks and flats along the upper Potomac; common. Apr.–May. Southern states, north to Md. (*S. nigra wardi* Bebb.)

The species was described from specimens obtained by Ward near Chain Bridge.

4. Salix fragilis L. CRACK WILLOW.

Along the Eastern Branch, Fourmile Run, and Hunting Creek. Apr.–May. Native of Eur.; often cultivated and becoming naturalized in eastern N. Amer.

5. Salix alba L. WHITE WILLOW.

Established in a few places along streams. Apr.–May. Native of Eur.; cultivated or naturalize eastern N. Amer.

6. Salix babylonica L. WEEPING WILLOW.

Along the upper Potomac; infrequent. Apr.–May. Native of Asia; cultivated and naturalized in eastern N. Amer.

7. Salix cordata Muhl.

Along the Potomac, Eastern Branch, and Hunting Creek. Apr.–May. Widely distributed in N. Amer.

A hybrid between this and *S. sericea* is found occasionally.

8. Salix sericea Marsh. SILKY WILLOW.

Along streams; common. Apr.–May. Eastern N. Amer.

9. Salix humilis Marsh. PRAIRIE WILLOW.

Dry fields, thickets, and open woods; frequent. March–Apr. Eastern N. Amer.

10. Salix tristis Ait. DWARF PRAIRIE WILLOW.

Dry fields and woods, chiefly eastward. Apr.–May. Eastern N. Amer.

2. POPULUS L. POPLAR.

Leaves deltoid or cordate-deltoid, glabrous on the surfaces, ciliate; buds glabrous, resinous; floral bracts falling early................................**1. P. virginiana.**

Leaves rounded, oval, or cordate-oval; buds neither glabrous nor resinous; floral bracts persistent.

Leaves on the young branches cordate-ovate, 15–20 cm. long or more.

Leaves crenate, long-petioled, auriculate at base, the auricles overlapping. **5. P. heterophylla.**

Leaves dentate or denticulate, the normal leaves broadly oval, acute, 5–10 cm. long, sericeous at first, glabrous in age..................**2. P. grandidentata.**

Leaves on the young branches broadly cordate-ovate, rarely over 10 cm. long, irregularly toothed or lobed.

Leaves on the young branches deeply 5-lobed, dark-green above, white-woolly beneath; normal leaves with more or less persistent wool; petioles shorter than the blades..**3. P. alba.**

Leaves on the young branches irregularly toothed, not deeply lobed, silvery-canescent or woolly; normal leaves commonly ovate, acute, canescent, becoming glabrous; petioles equaling or exceeding the blades. **4. P. canescens.**

1. Populus virginiana Fouger. COTTONWOOD.

River bottoms and low places. Apr. Middle Atlantic states. (*P. monilifera* Ait.)

Populus italica Moench (*P. dilatata* Ait.; *P. nigra italica* DuRoi), the Lombardy poplar, is extensively planted; readily recognized by its very broad, deltoid, abruptly acuminate root-shoot leaves and erect fastigiate branches. Native of Eur.

Populus nigra L., the black poplar, is occasionally planted. Native of Eur. The normal leaves are rhombic-acuminate, 5–8 cm. long, the branches spreading and in age horizontal.

Populus eugenei Simon-Louis (*P. monilifera* of authors, not Ait.), the Carolina poplar, is extensively planted in our streets and parks. It has an excurrent trunk and spreading branches; the leaves are triangular-ovate, broadest below the middle, long-acuminate, those of the root shoots more or less deltoid, the teeth in both cases being incurved.

2. Populus grandidentata Michx. LARGE-TOOTHED ASPEN.

Deciduous woods. Apr. Northern states, south to N. C.

Populus tremuloides Michx., the American aspen, has escaped from cultivation near Chevy Chase Lake (*Maxon & Standley*). Can. to Pa. and Nebr. Readily recognized by its broadly ovate or orbicular, crenulate, abruptly acuminate leaves, 3–6 cm. long.

3. Populus alba L. White or silver poplar.

Abandoned nurseries and old fields. March. Native of Eur. and Asia.

Populus alba bolleana Masters, Bolle's poplar, from Turkestan, is distinguished from the species by its pyramidal form and fastigiate branches. The leaves are larger and more deeply lobed than in the type and the lobes are incisely toothed.

4. Populus canescens (Ait.) J. E. Smith. Gray poplar.

In cultivation and escaped. March. Native of Eur.

Populus tacamahaca Mill. (*P. candicans* Ait.; *P. balsamifera candicans* A. Gray), the Balm of Gilead, is cultivated. Native of northern U. S. It is recognized by its broadly ovate, crenulate leaves, 6–20 cm. long, silvery beneath.

5. Populus heterophylla L. Swamp poplar.

Low ground and swamps; above Great Falls (*Bartlett*). Apr. Eastern states, south to Ga.

35. MYRICACEAE. Bayberry Family.

Leaves entire or toothed, without stipules; fruit a small drupe, usually covered with wax........1. **MYRICA.**

Leaves pinnately lobed, with stipules; fruit nutlike, surrounded by a burlike involucre........2. **COMPTONIA.**

1. MYRICA L.

1. Myrica carolinensis Mill. Bayberry.

Pine barrens and swamps; Silver Springs and throughout Prince Georges County; Eastern N. Amer. (*M. cerifera* of Ward's Flora.)

2. COMPTONIA Banks.

1. Comptonia peregrina (L.) Coulter. Sweet fern.

Near the Reform School; rare. Northern and eastern N. Amer. (*Myrica asplenifolia* L.)

36. JUGLANDACEAE. Walnut Family.

Leaflets 11–23, oblong-lanceolate, acuminate; staminate aments solitary; husk of the fruit indehiscent........1. **JUGLANS.**

Leaflets 5–9, unequal, the lower pairs commonly shorter; staminate aments in clusters; husk dehiscent........2. **HICORIA.**

1. JUGLANS L.

Leaflets with an asymmetric base; fruit globose, 4–6 cm. in diameter......1. **J. nigra.**

Leaflets with a nearly symmetric base, the terminal leaflet on a stalk 1 cm. long or more; fruit oblong, 4–7 cm. long, 3–4 cm. in diameter........2. **J. cinerea.**

1. Juglans nigra L. Black walnut.

Rich deciduous woods. Apr.–May; fr. Oct. Eastern U. S.

2. Juglans cinerea L. Butternut.

Rich woods; Potomac valley above Georgetown. Apr.–May; fr. Oct. Eastern N. Amer.

Juglans regia L., the cultivated English walnut, is distinguished by its elliptic-oblong, unequal-sided, entire leaflets. Native of Asia.

2. HICORIA Raf.

Rachis of leaves perfectly glabrous. Bud scales numerous, imbricate.

Leaflets 3–7, oblong or oblong-lanceolate; fruit obovoid, 4–5 cm. long, the husk thin, the nut angled, thick-shelled, bitter........3. **H. glabra.**

Leaflets 5–7, oblong or ovate-lanceolate; fruit globose or nearly so, 2.5 cm. in diameter or less, the husk thin, the nut not angled, thin-shelled, sweet.
4. **H. microcarpa.**

Rachis of leaves puberulent to densely hirsute (at least when young).
  Rachis densely hirsute. Leaflets 7–9, oblong-lanceolate or oblanceolate, acuminate; fruit globose or oblong, 3.5–7 cm. long, the husk thick, the nut angled, pointed, thick-shelled, sweet; bud scales numerous, imbricate.................**2. H. alba.**
  Rachis pubescent or puberulent (when young).
    Bud scales few, valvate; leaflets 7–9, lanceolate or oblong-lanceolate, acuminate, puberulent when young; fruit nearly globose, 2.5–3.5 cm. in diameter, the husk thin, the nut angled, thin-shelled, 2–2.5 cm. long, very bitter. **1. H. cordiformis.**
    Bud scales numerous, imbricate; leaflets oblong, oblong-lanceolate, or obovate; fruit globose or nearly so, 3.5–6 cm. in diameter, the husk thick, the nut thin-shelled, sweet. Rachis and twigs puberulent, becoming glabrous. **5. H. ovata.**

1. Hicoria cordiformis (Wang.) Britton. BITTERNUT.
Moist woods and low places. May; fr. Sept. Eastern U. S. (*Carya amara* Nutt.; *H. minima* Britton.)

2. Hicoria alba (L.) Britton. MOCKERNUT.
Dry deciduous woods. May; fr. Aug.–Sept. Eastern U. S. (*Carya tomentosa* Nutt.; *C. alba* K. Koch.)

3. Hicoria glabra (Mill.) Britton. PIGNUT HICKORY.
Deciduous woods. May; fr. Aug. Eastern U. S. (*Carya porcina* Nutt.; *C. glabra* Spach.)

4. Hicoria microcarpa (Nutt.) Britton. SMALL-FRUITED HICKORY.
Deciduous woods. May; fr. Oct. Northern states, south to Ga. (*Carya microcarpa* Nutt.)

5. Hicoria ovata (Mill.) Britton. SHAG-BARK or SHELL-BARK HICKORY.
Deciduous woods; Potomac valley. May; fr. Oct.–Nov. Eastern U. S. (*Carya alba* Nutt.; *C. ovata* K. Koch.)

37. BETULACEAE. Birch Family.

Seeds winged, small; staminate flowers 3 or more in the axil of each bract; fruit ovoid or oblong, 1.5 cm. long or smaller.
  Plants shrubs (rarely trees); leaves obovate or oval, obtuse, serrulate. Fruiting catkins persistent..**4. ALNUS.**
  Plants trees, mostly with peeling bark; leaves of an ovate or ovate-oblong type. **5. BETULA.**
Seeds not winged; staminate flowers solitary in the axil of each bract; fruit various.
  Plants shrubs; twigs warty, sparingly glandular-pubescent; leaves broadly cordate-ovate, doubly serrate, 10 cm. long or less. Pistillate flowers clustered; fruit a nut inclosed in a laciniate involucre composed of two bracts..**3. CORYLUS.**
  Plants trees; twigs smooth, sparingly warty, or pubescent; leaves ovate-oblong, cordate or rounded at the base, taper-pointed.
    Fruiting axis 5 cm. long or more; fruiting bracts foliaceous, 3-lobed, the lateral lobes small, the middle one oblong, serrulate, 2.5 cm. long or less. **1. CARPINUS.**
    Fruiting axis 3 cm. long or less; fruiting bracts becoming saclike, bladdery, inclosing the nut.....................................**2. OSTRYA.**

1. CARPINUS L.

1. Carpinus caroliniana Walt. AMERICAN HORNBEAM. BLUE BEECH.
Along streams and in low ground. Apr.; fr. Aug. Eastern N. Amer.

2. OSTRYA Scop.

1. Ostrya virginiana (Mill.) Willd. HOP HORNBEAM. IRONWOOD.
Woods; Potomac valley. Apr.; fr. July. Eastern N. Amer.

3. CORYLUS L.

1. Corylus americana Walt. HAZELNUT.
Low places. March; fr. Aug. Eastern U. S.

4. ALNUS Hill.

1. Alnus rugosa (DuRoi) Spreng. ALDER.
Swamps and low ground. March. Eastern U. S. (*A. serrulata* Willd.)

5. BETULA L. BIRCH.

Leaves rhombic-ovate; bark yellow; twigs grayish, pubescent............**1. B. nigra.**
Leaves ovate-oblong, cordate; bark brown; twigs glabrous or nearly so....**2. B. lenta.**

1. Betula nigra L. BLACK, RED, or RIVER BIRCH.
Along streams and in low wet places. Apr.; fr. May. Eastern U. S.

2. Betula lenta L. CHERRY or SWEET BIRCH.
Bluffs along the Potomac above Cabin John. Apr.; fr. May. Eastern U. S.

38. FAGACEAE. Beech Family.

Leaves not straight-veined, entire, crenate, lobed, or pinnatifid; fruit an acorn (1-seeded nut) partially inclosed in a cuplike involucre. Staminate flowers in slender pendulous aments; pistillate flowers borne singly or in clusters. **3. QUERCUS.**

Leaves straight-veined, uniformly serrate, oblong-lanceolate to ovate-oblong or oblanceolate; fruit not an acorn.
- Leaves ovate-oblong; staminate flowers in globose long-stalked heads; fruit (bur) ovate, 1.5 cm. long or less, the involucre prickly, splitting into 4 valves; nut 2, 3-angled; trees with smooth, light gray bark......................**1. FAGUS.**
- Leaves oblong-lanceolate to oblanceolate; staminate flowers in long slender aments, in separate clusters or in the upper part of the pistillate aments; fruit (bur) globular, 2.5–7 cm. in diameter; nuts 2 or 3 or more, inclosed in a densely prickly involucre; trees or shrubs...........................**2. CASTANEA.**

1. FAGUS L.

1. Fagus grandifolia Ehrh. BEECH.
Deciduous woods. Apr.–May; fr. Sept.–Oct. Eastern N. Amer. (*F. ferruginea* Ait.)

2. CASTANEA Hill.

Plants trees; leaves 10–20 cm. long or more, oblong-lanceolate, glabrous at maturity. Bur about 7 cm. in diameter....................................**1. C. dentata.**

Plants shrubs; leaves densely white-pubescent or tomentulose beneath, oblong-lanceolate or oblanceolate.
- Leaves about 10 cm. long; bur 2.5 cm. long or smaller.................**2. C. pumila.**
- Leaves 10–20 cm. long or more; mature fruit unknown.............**3. C. neglecta.**

1. Castanea dentata (Marsh.) Borkh. CHESTNUT.
Deciduous woods. June; fr. Sept.–Oct. Eastern U. S. (*C. vulgaris americana* A. DC.)

2. Castanea pumila (L.) Mill. CHINQUAPIN.
Deciduous and coniferous woods. June; fr. Sept.–Oct. Southern states, north to Pa.

3. Castanea neglecta Dode.

With the preceding species near Upper Marlboro. June. The Upper Marlboro specimens have the leaves of *C. dentata* and the inflorescence of *C. pumila;* probably they represent a hybrid between those species.

3. QUERCUS L. OAK.

Leaves entire, linear to oblong-lanceolate.

Leaves linear-lanceolate; cup saucer-shaped, 8–12 mm. broad; acorn about 10 mm. high...**1. Q. phellos.**

Leaves oblong-lanceolate; cup hemispheric or nearly so, 10–15 mm. broad; acorn 15 mm. high or smaller....................................**2. Q. imbricaria.**

Leaves few-toothed to deeply lobed.

Leaves very broad toward the apex, 3 or 5-lobed, abruptly contracted toward the base; cup hemispheric, 10–15 mm. broad; acorn ovoid......**3. Q. marilandica.**

Leaves broadest at or near the middle, variously lobed or toothed, not abruptly contracted toward the base.

Leaves more or less deeply lobed, the lobes bristle-pointed. Acorns ovoid, bitter. BLACK OR RED OAKS.

Leaves glabrous or with tomentum only in the axils of the veins beneath.

Leaves with asymmetric lobes.

Leaves narrowly oblong or oblanceolate; cup hemispheric or nearly so, about 15 mm. broad..................................**1a. Q. heterophylla.**

Leaves of a broader type; cup about 20 mm. broad............**2a. Q. leana.**

Leaves with more or less symmetric lobes.

Average leaves 10 cm. long or less, the basal lobes small, triangular. Cup saucer-shaped, 10 mm. broad; lowermost branches pendent; leaves brown in autumn..................................**4. Q. palustris.**

Average leaves 15 cm. long or more, variously lobed, the sinuses broad.

Lateral lobes of the leaves commonly simple, with few teeth, forming an angle of 45° with the midrib; cup saucer-shaped, 2.5 cm. broad or more. Leaves red-brown in autumn..............**5. Q. maxima.**

Lateral lobes commonly 3-cleft, with accessory teeth, the primary lobes forming an angle of about 60° with the midrib; cup turbinate or hemispheric, 2 cm. broad or more.

Buds reddish brown, sparingly pubescent; leaves scarlet in autumn. **6. Q. coccinea.**

Buds densely grayish-pubescent; leaves brown in autumn. **8. Q. velutina.**

Leaves pubescent or tomentulose beneath.

Average leaves about 7 cm. long, commonly 5-lobed; cup 10 mm. broad, turbinate. Lobes simple or nearly so, broadly triangular, the basal ones very short or wanting; acorn globose-ovoid........**7. Q. ilicifolia.**

Average leaves 12 cm. long or more; cup 15 mm. broad or more, turbinate.

Buds densely grayish-pubescent; leaves more or less deeply 7-lobed, the lateral lobes broad; acorn ovoid; leaves brown in autumn. **8. Q. velutina.**

Buds sparingly pubescent, red-brown; leaves more or less deeply 3–13-lobed, the lobes commonly simple, falcate, the base rounded; acorn globose-ovoid; leaves scarlet in autumn....................**9. Q. rubra.**

Leaves varying from serrate to deeply lobed, the lobes not bristle-tipped (at most acute).

Leaves more or less deeply lobed (sometimes toothed in no. 11). WHITE OAKS.

Leaves 20 cm. long or larger, obovate-oblong, more or less deeply 13–15-lobed, the lobes oblong. Cup hemispheric, 20 mm. broad; acorn oblong; leaves red-brown in autumn.......................................**10. Q. saulii.**

Leaves 12 cm. long or larger, more or less deeply 5–9-lobed.

Lateral lobes of the leaves divaricate, as broad as long, truncate or shallowly lobed, the basal lobes small. Cup turbinate, about 10 mm. broad; acorn ovoid; leaves copper or red-brown in autumn..**11. Q. stellata.**

Lateral lobes forming an angle of 45° with the midrib, oblong, simple or with secondary lobes.

Primary lobes of the leaves entire or 2–3-lobed; cup hemispheric, 15–20 mm. broad; acorn oblong, 2–3 cm. long, stalked. Leaves copper-brown in autumn; bark of trunk flaky................**12. Q. alba.**

Primary lobes commonly entire, the leaves smaller; cup 10 mm. broad or more; acorn sessile or nearly so, ovoid. (Bark and fruit resembling those of *Q. stellata* and the leaves those of *Q. alba.*) **12a. Q. alba×stellata.**

Leaves almost regularly toothed.

Leaves angularly toothed or lobed, obovate, 10 cm. long or larger, cuneate at the base, tomentulose or green and glabrate. Fruit long-stalked; cup hemispheric, 10 mm. broad or more; acorn ovoid-oblong; bark of trunk flaky..**13. Q. bicolor.**

Leaves crenate-serrate. CHESTNUT OAKS.

Teeth of leaves blunt.

Fruit sessile; small shrub. Leaves obovate, 10 cm. long or less, pale and pubescent beneath, copper-red in autumn; cup hemispheric, 15 mm. broad or less; acorn ovoid...................**14. Q. prinoides.**

Fruit stalked; tall trees.

Leaves oblong or obovate, pale beneath, 15 cm. long or larger, reddish brown in autumn; cup turbinate, about 20 mm. broad; acorn ovoid or oblong, 15–24 mm. long...................**15. Q. montana.**

Leaves obovate, abruptly acuminate, 10 cm. long or larger, pale and pubescent beneath, brown in autumn; cup hemispheric, 30 mm. broad or more; acorn ovoid..........................**16. Q. prinus.**

Teeth of leaves acute.

Plants small shrubs..................................**14. Q. prinoides.**

Plants trees.

Leaves obovate, broad...............................**16. Q. prinus.**

Leaves oblong-lanceolate, gray-tomentulose beneath, 10 cm. long or larger. Cup 15 mm. broad or more; acorn ovoid, 12–20 mm. long. **17. Q. muhlenbergii.**

1. Quercus phellos L. WILLOW OAK.

Moist woods. Eastern U. S.

All the oaks flower in April or May and mature the fruit in September.

1a. Quercus heterophylla Michx. f. BARTRAM OAK.

With the preceding; rare. (*Q. phellos×velutina.*)

2. Quercus imbricaria Michx. SHINGLE OAK.

Low woods. Eastern U. S.

2a. Quercus leana Nutt.

With the preceding; rare. (*Q. imbricaria×velutina.*)

3. Quercus marilandica Muenchh. BLACK JACK. JACK OAK.

Dry soil. Eastern U. S. (*Q. nigra* of Ward's Flora.)

The characteristic form on the Serpentine barrens has 5-lobed rather than 3-lobed leaves. (*Q. nigra quinqueloba* A. DC.)

4. Quercus palustris DuRoi. PIN OAK.

Low places. Northern states, south to Va.

Frequently planted in parks and along streets. A tree is shown in plate 22A.

5. **Quercus maxima** (Marsh.) Ashe. RED OAK.
Low woods. Eastern N. Amer. (*Q. rubra maxima* Marsh.; *Q. rubra* of authors, not L.)
A tree is shown in plate 22B.

6. **Quercus coccinea** Wang. SCARLET OAK.
Dry woods and hillsides. Northern states, south to N. C.

7. **Quercus ilicifolia** Wang. BEAR OAK.
Dry ground; near Laurel, possibly not reaching our limits. Northern states, south to Md. (*Q. nana* Sarg.)

8. **Quercus velutina** Lam. BLACK OAK. QUERCITRON.
Dry woods. Eastern U. S. (*Q. tinctoria* Michx.)

9. **Quercus rubra** L. SPANISH OAK.
Dry woods. Southern states, north to N. J. (*Q. falcata* Michx.; *Q. triloba* Michx.; *Q. digitata* Sudw.)

10. **Quercus saulii** C. Schneid. SAUL'S OAK.
Dry woods; frequent in *Q. alba* and *Q. montana* colonies. (*Q. prinus*×*alba* of authors; *Q. montana*×*alba*?)

Quercus macrocarpa Michx., the bur oak, is sometimes planted within our limits. Native farther north and west. Readily recognized by its lyrate-pinnatifid, obovate or obovate-oblong leaves, 20 cm. long or more; cup hemispheric, 3–5 cm. broad, the upper scales produced into filiform tips; acorns depressed-globose, half covered by the cup.

11. **Quercus stellata** Wang. POST OAK.
Dry woods and barrens. Eastern U. S. (*Q. minor* Sarg.)

12. **Quercus alba** L. WHITE OAK.
Dry woods. Eastern U. S.
A tree is shown in plate 23.

12a. **Quercus alba × stellata?**
Dry woods, with *Q. alba* and *Q. stellata;* perhaps a distinct species.

13. **Quercus bicolor** Willd. SWAMP WHITE OAK.
Low woods and river bottoms. Eastern N. Amer. (*Q. platanoides* Sudw.)
The leaves on young growth of this species much resemble those of *Q. lyrata.*

14. **Quercus prinoides** Willd. SCRUB CHESTNUT OAK.
Dry grounds and pine barrens. Eastern U. S.

15. **Quercus montana** Willd. ROCK CHESTNUT OAK.
Dry woods and hillsides. Eastern U. S. (*Q. prinus* of authors, not L.)

16. **Quercus prinus** L. BASKET OAK.
Low woods and swampy ground. Southern states, north to Del. (*Q. michauxii* Nutt.)

17. **Quercus muhlenbergii** Engelm. CHESTNUT OAK.
Low places. Eastern U. S. (*Q. acuminata* Sarg.)

39. ULMACEAE. Elm Family.

Leaves of an oval type, narrowed to an unequal base; fruit a winged nut (samara). **1. ULMUS.**

Leaves of an ovate type, with a broad rounded unequal base; fruit a drupe. **2. CELTIS.**

1. ULMUS L. ELM.

Leaves glabrous or nearly so on the upper surface; wing of the samara ciliate, the body glabrous..**1. U. americana.**

Leaves very rough on the upper surface; wing of samara not ciliate, the body pubescent..**2. U. fulva.**

1. **Ulmus americana** L. AMERICAN ELM.
Low woods and along streams; also planted along our streets. March; fr. Apr. Eastern U. S.

2. **Ulmus fulva** Michx. RED ELM.
Low woods and along streams; also in cultivation. March; fr. Apr. Eastern U. S. Known also as slippery elm.

Ulmus campestris L. the English elm, from western Europe, is frequently planted. Petioles 5 mm. long or more; blades 5–7.5 cm. long, oval or ovate, short-acuminate, scabrous above, pubescent beneath; fruit nearly orbicular, 10 mm. broad or more, the seed touching the notch.

2. CELTIS L. HACKBERRY.

Leaves mostly entire, ovate-lanceolate, acuminate, 6 cm. long and 4 cm. wide or smaller, glabrous on the upper surface....................1. **C. mississippiensis.**
Leaves serrate, of a broader type, mostly acute.
Leaves glabrous or nearly so on the upper surface................2. **C. occidentalis.**
Leaves rough on the upper surface................................3. **C. crassifolia.**

1. **Celtis mississippiensis** Bosc.
Near Anacostia (*Painter*). Southern states, north to Va.

2. **Celtis occidentalis** L.
Rocky soil and dry woods. May; fr. Sept.–Oct. Northern states, south to N. C.

3. **Celtis crassifolia** Lam.
Potomac Valley above Georgetown. May; fr. Sept.–Oct. Northern states, south to S. C.

40. MORACEAE. Mulberry Family.

Ficus carica L., the common fig, is often found in waste ground, especially about Alexandria.

Leaves entire, ovate to oblong-lanceolate, acuminate; staminate flowers in long-stalked racemes. Pistillate flowers in globose heads; fruit yellowish green, 10 cm. in diameter or less..1. **TOXYLON.**
Leaves toothed or lobed; staminate flowers in spikes.
Twigs hirsute; fruit in globose heads 2 cm. in diameter, not edible, on short stout peduncles. Leaves rough above, velvety beneath, ovate-lanceolate, serrate or 2–3-lobed ....2. **PAPYRIUS.**
Twigs glabrous or pubescent; fruit aggregate, oblong, edible............3. **MORUS.**

1. TOXYLON Raf.

1. **Toxylon pomiferum** Raf. OSAGE ORANGE.
Escaped from cultivation. May. Native farther west. (*Maclura aurantiaca* Nutt.; *M. pomifera* C. Schneid.)

2. PAPYRIUS Lam.

1. **Papyrius papyrifera** (L.) Kuntze. PAPER MULBERRY.
Escaped from cultivation; forming thickets. May. Native of the Pacific Islands. (*Broussonetia papyrifera* Vent.)

3. MORUS L. MULBERRY.

Leaves cordate-ovate, smooth, glabrous or nearly so; fruit white, 1–1.5 cm. long.
1. **M. alba.**
Leaves obliquely ovate, rough above, pubescent beneath; fruit purple, 2 cm. long or more...2. **M. rubra.**

1. **Morus alba** L. WHITE MULBERRY.
Escaped from cultivation. May. Native of western Asia and Eur.

2. **Morus rubra** L. RED MULBERRY.
Low woods. May. Eastern U. S.

41. URTICACEAE. Nettle Family.

Leaves lobed or divided. Plants without stinging hairs.
  Plants erect annuals; leaves divided to the base into several leaflets. **1. CANNABIS.**
  Plants twining perennials; leaves toothed or merely lobed, not divided to the base. **2. HUMULUS.**
Leaves merely toothed.
  Leaves alternate.
    Plants without stinging hairs; leaves lanceolate, less than 2.5 cm. wide; flower clusters sessile in the axils of the leaves.................**3. PARIETARIA.**
    Plants with stinging hairs; leaves broadly ovate, 5–12 cm. wide or wider; flowers in loose branched cymes..............................**4. URTICASTRUM.**
  Leaves opposite.
    Plants with stinging hairs, perennial...............................**5. URTICA.**
    Plants without stinging hairs, minutely hairy or glabrous.
      Plants annual, glabrous; leaves shining, succulent, the petioles usually as long as the blades; flowers in loose cymes.........................**6. PILEA.**
      Plants perennial, more or less hairy; leaves not shining, thin, the petioles shorter than the blades; flowers in spikes or loose cymes..**7. BOEHMERIA.**

1. CANNABIS L.

1. Cannabis sativa L. HEMP.

Occasional in waste ground about Washington. June–Aug. Native of Eurasia; common in cultivation and often escaping.

2. HUMULUS L. HOP.

1. Humulus lupulus L. COMMON HOP.

Rare as an escape from cultivation. Aug.–Sept. Native of Eur.; often cultivated in the U. S. for ornament or for its bracts, which are used in making yeast, and frequently escaping.

Humulus japonicus Sieb. & Zucc., the Japanese hop, was collected in waste ground along the Washington river front, Sept., 1899 (*Steele*). Native of Japan; often cultivated for ornament, and escaped at various places in the U. S.

3. PARIETARIA L.

1. Parietaria pennsylvanica Muhl. PELLITORY.

Rich woods or along stone walls; rare. June–July. Widely distributed in N. Amer.

4. URTICASTRUM Fabr.

1. Urticastrum divaricatum (L.) Kuntze. WOOD NETTLE.

Rich woods and alluvial soil; common. July–Oct. Eastern N. Amer. (*Laportea canadensis* Gaud.)

5. URTICA L. NETTLE.

Leaves lanceolate or ovate-lanceolate, usually twice as long as broad or longer, rounded or cordate at the base, evenly toothed with comparatively small teeth, only slightly bristly beneath...**1. U. gracilis.**
Leaves ovate or broadly ovate, usually less than twice as long as broad, coarsely and often irregularly toothed, very bristly beneath.......................**2. U. dioica.**

1. Urtica gracilis Ait.

Wet soil, especially on canal banks, there abundant. June–Aug. Widely distributed in N. Amer.

2. Urtica dioica L.

Moist soil; frequent. May–July. Native of Eur.; naturalized in the eastern U. S.

6. PILEA Lindl.

1. **Pilea pumila** (L.) A. Gray. RICHWEED.

Moist, often alluvial soil; common. Aug.–Sept. Eastern N. Amer. (*Adicea pumila* Raf.)

7. BOEHMERIA Jacq.

1. **Boehmeria cylindrica** (L.) Swartz. FALSE NETTLE.

Moist or wet soil; frequent. July–Oct. Eastern N. Amer.

Boehmeria nivea (L.) Gaud., ramie, with leaves white-hairy beneath, was collected in waste ground along the river front, Washington, Sept., 1899 (*Steele*). Native of Asia; sometimes cultivated for ornament or for its fiber, rarely escaping in the U. S.

42. LORANTHACEAE. Mistletoe Family.

1. PHORADENDRON Nutt.

1. **Phoradendron flavescens** (Pursh) Nutt. MISTLETOE.

Rare in our region but more abundant eastward toward Chesapeake Bay, growing on branches of *Nyssa sylvatica* and *Acer rubrum*. May–July, the white berries maturing in late autumn. Southern states, north to N. J.

43. SANTALACEAE. Sandalwood Family.

1. COMANDRA Nutt.

1. **Comandra umbellata** (L.) Nutt. BASTARD TOAD-FLAX.

Dry fields and woods; frequent. May–July. Eastern N. Amer.

The plant is parasitic upon the roots of other plants. It is glabrous, more or less glaucous, with oblong or elliptic, sessile, alternate, obtuse or acutish leaves, and small white flowers in cymes.

44. ARISTOLOCHIACEAE. Birthwort Family.

Stems erect, slender; petioles shorter than the leaf blades, these ovate or ovate-oblong, long-tapering at the tip; flowers very irregular.....1. **ARISTOLOCHIA.**

Stems prostrate, stout, rooting; petioles longer than the blades, these kidney-shaped, broadly rounded at the apex; flowers regular......................2. **ASARUM.**

1. ARISTOLOCHIA L.

1. **Aristolochia serpentaria** L. VIRGINIA SNAKEROOT.

Dry woods; local. June–July. Eastern U. S.

The deep purple flowers are borne on slender scaly branches at the base of the plant. The roots are used in medicine.

2. ASARUM L.

1. **Asarum canadense** L. WILD GINGER.

Rich woods; common. Apr.–May. Eastern N. Amer.

The rootstocks have the flavor of ginger.

Material from our region has been referred to *A. reflexum* Bicknell (*A. canadense reflexum* Robinson; *A. reflexum ambiguum* Bicknell). That is supposed to differ from *A. canadense* in having short calyx lobes about as long as the calyx tube; in *A. canadense* the calyx lobes are longer than the tube. *A. reflexum*, however, scarcely seems worthy of specific rank.

45. POLYGONACEAE. Buckwheat Family.

Sepals 6, the 3 outer ones unchanged in fruit, the 3 inner ones mostly developed into wings..........1. **RUMEX.**

Sepals usually 4 or 5, those of the outer row often reflexed or enlarged at maturity.

Flowers axillary, solitary or clustered; leaf blades jointed at the base; stipule sheaths (ocreæ) 2-lobed or laciniate..........2. **POLYGONUM.**

Flowers in terminal or axillary, spikelike, often panicled racemes; blades not jointed; ocreæ not lobed or laciniate.

Ocreæ cylindric, truncate.

Calyx curved; sepals 4; stamens 4..........3. **TOVARA.**

Calyx not curved; sepals mostly 5, if fewer the stamens more than 5. 4. **PERSICARIA.**

Ocreæ oblique, more or less open toward the leaf.

Flowers with the outer sepals keeled or conspicuously winged at maturity.

Plants twining vines; ocreæ persistent..........5. **BILDERDYKIA.**

Plants very tall stout herbs, woody below; ocreæ fugacious. 6. **PLEUROPTERUS.**

Flowers with none of the sepals keeled or winged.

Stems ascending or reclining, armed with very numerous recurved prickles; ocreæ persistent..........7. **TRACAULON.**

Stems erect, unarmed; ocreæ fragile, soon withering..........8. **FAGOPYRUM.**

1. RUMEX L. Dock.

Plants small, with slender creeping propagating roots; foliage strongly acid; leaves hastately lobed..........1. **R. acetosella.**

Plants large; rootstocks stout, deep-seated; foliage slightly or not at all acid; leaves not lobed.

Leaves flat, bright or pale green.

Pedicels several times as long as the wings; each of the 3 wings usually bearing a well-developed tubercle at maturity..........2. **R. verticillatus.**

Pedicels about equaling the wings; usually only one of the wings tuberculate. 3. **R. altissimus.**

Leaves wavy or crisped at the margins, dark green.

Wings with a few spreading bristle-like teeth..........4. **R. obtusifolius.**

Wings entire or nearly so.

Blades of lower leaves narrowed at base; usually only one of the wings tuberculate..........5. **R. patientia.**

Blades of lower leaves cordate or obtuse at base; all 3 of the wings usually tuberculate..........6. **R. crispus.**

1. **Rumex acetosella** L. SHEEP SORREL.

Dry fields and rocky hillsides; abundant. Summer. Nearly throughout N. Amer.; naturalized from Eur.

2. **Rumex verticillatus** L. SWAMP DOCK.

Swamps and moist alluvial situations; several localities, principally along the upper Potomac. May–July. Eastern N. Amer.

3. **Rumex altissimus** Wood.

Moist alluvial situations; not uncommon, especially along the Potomac. Apr.-June. Eastern U. S.

4. **Rumex obtusifolius** L. BITTER DOCK

Waste places; common. Summer. Nearly throughout N. Amer.; naturalized from Eur.

5. Rumex patientia L.

Dumps and waste places; apparently not very common. May–June. Northeastern states westward; naturalized from Eur.

6. Rumex crispus L. NARROW DOCK.

Roadsides and waste places; common. Summer. Naturalized from Eur., nearly throughout N. Amer.

Hybrids between this species and *R. obtusifolius* are reported by Ward.

2. POLYGONUM L. KNOTWEED.

Stem and branches angled.
  Leaves plicate; fruits erect, on stout pedicels........................**5. P. tenue.**
  Leaves flat, the margins merely revolute; fruits drooping on slender reflexed pedicels. **6. P. douglasii.**
Stem and branches terete or nearly so, usually striate.
  Plants chiefly prostrate, the branches mostly basal; flowers comparatively small, the sepals less than 2 mm. long.
    Leaves usually acute; achene ovoid, acute....................**1. P. aviculare.**
    Leaves obtuse or subacute; achene broadly ovoid, constricted below the apex, often conspicuously so...............................**2. P. buxiforme.**
  Plants erect or ascending, more or less diffusely branched above the base; flowers larger, the sepals 2–3 mm. long.
    Leaves elliptic to obovate, obtuse to acutish, yellowish green.....**3. P. erectum.**
    Leaves linear-elliptic to lance-elliptic, acuminate, green (not yellowish). **4. P. atlanticum.**

1. Polygonum aviculare L. KNOTGRASS.

Cultivated and waste places; a common weed. Summer and autumn. N. Amer. and Eur.

2. Polygonum buxiforme Small.

Waste ground; apparently rare locally, a single record. July. Widely distributed in N. Amer.

3. Polygonum erectum L.

Moist or dry situations; common. July–Sept. Widely distributed in N. Amer.

4. Polygonum atlanticum (Robinson) Bicknell.

Vicinity of Government fish ponds, a single record (July, 1902). Adventive; native of salt marshes along the N. Eng. coast.

5. Polygonum tenue Michx.

Dryish, more or less sandy slopes; not very common. July–Sept. Eastern N. Amer.

6. Polygonum douglasii Greene.

Old circus grounds; a single record (Aug. 7, 1912). Western U. S.; adventive eastward.

3. TOVARA Adans.

1. Tovara virginica (L.) Raf. JUMPSEED.

Low moist woods and alluvial thickets; common. Late summer. Eastern N. Amer.

4. PERSICARIA Mill.

Spikes solitary or in pairs.
  Plants usually aquatic; leaves floating, long-petioled, obtuse or acutish; spikes ovoid or oblong, not more than 2.5 cm. long, the peduncles glabrous...**1. P. amphibia.**
  Plants usually of swamps or stream banks, erect or ascending; leaves short-petioled, acuminate; spikes 3–10 cm. long, the peduncles hispid..**2. P. muhlenbergii.**

Spikes several or numerous.
  Ocreæ not fringed with bristles.
    Flowers white, greenish, or pink, borne in slender, elongate, usually drooping spikes 2–8 cm. long..........................**3. P. lapathifolia.**
    Flowers deep pink or rose-colored, borne in thick oblong-cylindric erect spikes 2–5 cm. long.................................**4. P. pennsylvanica.**
  Ocreæ fringed with bristles.
    Sepals conspicuously gland-dotted.
      Spikes drooping; stamens 4 or 6; achene granular and dull.....**5. P. hydropiper.**
      Spikes erect; stamens 8; achene smooth and shining.......**6. P. punctata.**
    Sepals not gland-dotted.
      Plants up to 2.5 meters high, coarse; ocreæ often with a spreading herbaceous border; leaves long-petioled, the blades broad, ovate or oblong; spikes drooping...**7. P. orientalis.**
      Plants 20–100 cm. high; ocreæ without a spreading border; leaves sessile or nearly so, the blades narrow, linear-lanceolate to oblong-lanceolate; spikes erect.
        Plants annual; spikes short-cylindric, dense. Leaves usually with a dark triangular or crescent-shaped spot near the middle.......**8. P. mitis.**
        Plants perennial; spikes slender, often interrupted.....**9. P. hydropiperoides.**

1. Persicaria amphibia (L.) S. F. Gray. WILLOW-WEED.

Aquatic; two collections on the Potomac flats between the Outlet Lock and Ead's Mill. Midsummer. Widely distributed in N. Amer. (*Polygonum hartwrightii* A. Gray; *P. amphibium* L.)

2. Persicaria muhlenbergii (S. Wats.) Small.

River banks and other moist situations; not uncommon. Aug.–Sept. Widely distributed in N. Amer. (*Polygonum emersum* Britton; *P. amphibium terrestre* of Ward's Flora; *P. muhlenbergii* S. Wats.)

3. Persicaria lapathifolia (L.) S. F. Gray. WILLOW-WEED.

Low waste places; common, especially on the Potomac Flats. July–Sept. Throughout N. Amer. (*Polygonum incarnatum* Ell.; *P. lapathifolium* L.)

4. Persicaria pennsylvanica (L.) Small.

Wet places generally; common. July–Sept. Eastern N. Amer. (*Polygonum pennsylvanicum* L.)

5. Persicaria hydropiper (L.) Opiz. SMARTWEED.

Low moist situations; locally common. July–Sept. Nearly throughout N. Amer.; naturalized from Eur. (*Polygonum hydropiper* L.)

6. Persicaria punctata (Ell.) Small. SMARTWEED.

Swamps and moist alluvial situations; common. July–Sept. Nearly throughout N. Amer. (*Polygonum punctatum* Ell.)

7. Persicaria orientalis (L.) Spach. PRINCE'S-FEATHER.

Waste places; not uncommon, particularly along the Canal and on the Potomac Flats. July–Sept. Native of India; escaped from gardens and naturalized in the eastern U. S. (*Polygonum orientale* L.)

8. Persicaria mitis Gilib. LADY'S-THUMB. PINKWEED.

Moist waste places; common, especially along the river. June–Sept. N. Amer. and Eur. (*Polygonum persicaria* L.; *Persicaria persicaria* Small.)

9. Persicaria hydropiperoides (Michx.) Small.

Wet alluvial situations; several stations along the Potomac, but not common. Aug.–Oct. N. Amer. (*Polygonum hydropiperoides* Michx.)

5. BILDERDYKIA Dum.

Plants annual; outer sepals keeled at maturity.................**1. B. convolvulus.**
Plants perennial; outer sepals conspicuously winged at maturity...**2. B. scandens.**

1. Bilderdykia convolvulus (L.) Dum. BINDWEED.

Waste and cultivated ground; common weed. Summer. Naturalized from Eur.; nearly throughout N. Amer. (*Polygonum convolvulus* L.; *Tiniaria convolvulus* Webb & Moq.)

2. Bilderdykia scandens (L.) Greene.

Thickets and brushy fields; abundant. July–Sept. Eastern N. Amer. (*Polygonum scandens* L.; *Tiniaria scandens* Small.)

Polygonum cristatum Engelm. & Gray is a form of this species with incised sepal wings. It has been collected at several localities within our range.

6. PLEUROPTERUS Turcz.

1. Pleuropterus zuccarinii Small. JAPANESE KNOTWEED.

Escaped from cultivation at several localities. July–Oct. Native of Japan; escaped locally in the northeastern U. S. (*Polygonum cuspidatum* Sieb. & Zucc.)

7. TRACAULON Raf. TEAR-THUMB.

Stems sharply 4-angled; leaves short-petioled, the blades arrow-shaped; style 3-parted; achene sharply 3-angled.................................**1. T. sagittatum.**

Stems ridged; leaves mostly long-petioled, the blades halberd-shaped; style 2-parted; achene lenticular..**2. T. arifolium.**

1. Tracaulon sagittatum (L.) Small.

Swamps, wet thickets, and stream banks; common. Aug.–Sept. Eastern N. Amer. (*Polygonum sagittatum* L.)

2. Tracaulon arifolium (L.) Raf.

Low woods or borders of woods; not very common. Aug.–Sept. Eastern N. Amer. (*Polygonum arifolium* L.)

8. FAGOPYRUM Gaertn. BUCKWHEAT.

1. Fagopyrum esculentum Moench.

Dumps and waste places; occasional. Summer. Cultivated in N. Amer.; sometimes escaping. (*Fagopyrum fagopyrum* Karst.)

46. CHENOPODIACEAE. Goosefoot Family.

Leaves linear, pungent-tipped; plants neither mealy nor glandular.....**3. SALSOLA.**

Leaves broader than linear, not pungent-tipped; plants glandular or more or less white-mealy.

Fruit inclosed in a regular toothed calyx; leaves all alternate; flowers all alike. **1. CHENOPODIUM.**

Fruit inclosed by 2 nearly distinct triangular green bracts; lower leaves opposite; flowers of 2 kinds, staminate and pistillate......................**2. ATRIPLEX.**

1. CHENOPODIUM L.

Plants with a strong disagreeable odor, even when dry, more or less glandular; leaves bright green; flower clusters in slender spikes..............**1. C. ambrosioides.**

Plants without a strong odor, never glandular; flower clusters not in slender spikes.

Outer coat of the fruit easily separated from the seed, the latter shining; plants slender, usually found in woods. Leaves bright green, thin, entire or toothed near the base...**2. C. boscianum.**

Outer coat of the fruit firmly attached to the seed and not easily separated from it by rubbing; plants usually stout and frequenting waste or cultivated ground.

Inflorescence usually shorter than the leaves, comparatively few-flowered; leaves green, not at all mealy, shining on the upper surface..........**3. C. murale.**

Inflorescence usually much longer than the leaves, many-flowered; leaves never shining, at least the youngest ones more or less white-mealy.
  Leaves bright green, slightly mealy when young; seeds 1.5–2 mm. broad. **4. C. paganum.**
  Leaves white-mealy; seeds 1.5 mm. broad or smaller.............**5. C. album.**

1. Chenopodium ambrosioides L. WORMSEED.

Waste ground, especially along streets and about barnyards; common. July–Oct. Widely distributed in N. Amer. and in the tropics of the Old World. (*C. anthelminticum* L.; *C. ambrosioides anthelminticum* A. Gray.)

The seeds, "American wormseed," are used medicinally.

Chenopodium botrys L., Jerusalem oak, with sweet-scented leaves, was reported from Washington by Ward, but has not been collected recently.

2. Chenopodium boscianum Moq.

Woods; infrequent. June–Oct. Eastern U. S.

3. Chenopodium murale L. NETTLE-LEAF GOOSEFOOT.

Common along streets. July–Oct. Native of Eur.; now widely dispersed in most civilized regions.

C. urbicum of Ward's Flora doubtless belongs here; the latter species is not known from our region.

4. Chenopodium paganum Reichenb.

Moist ground; common. June–Oct. Native of Eur.; now widely naturalized in the U. S. (*C. viride* of most authors, not of Linnaeus.)

Specimens of this were once reported from the District by Steele as *C. rubrum* L., a quite different species that is not known to occur here. *C. lanceolatum* Muhl. is a form, or perhaps a species, with narrow leaves.

5. Chenopodium album L. LAMB'S-QUARTERS. PIGWEED.

Waste and cultivated ground; an abundant weed. June–Oct. Native of Eur. but now widely naturalized in N. Amer., or it may be in part native.

The young plants are used as "greens."

2. ATRIPLEX L.

1. Atriplex hastata L.

Common in the streets of Alexandria; rare in waste ground about Washington. July–Oct. Widely dispersed in the U. S.; our plants probably adventive from Eur. (*A. patula hastata* A. Gray.)

3. SALSOLA L.

1. Salsola kali L. SALTWORT.

Reported from Alexandria by Ward. Frequent along the Atlantic coast of N. Amer. and in Eur.

47. AMARANTHACEAE. Amaranth Family.

Leaves opposite; flowers white; plants perennial........................**1. IRESINE.**
Leaves alternate; flowers green or reddish; plants annual.
  Fruit fleshy, 3–5-angled, indehiscent; pistillate flowers without sepals; plants pistillate and staminate; leaves lanceolate........................**2. ACNIDA.**
  Fruit thin and dry, not angled, dehiscent; pistillate flowers with sepals; pistillate and staminate flowers on the same plant; leaves usually broader than lanceolate. **3. AMARANTHUS.**

1. IRESINE P. Br.

1. Iresine rhizomatosa Standley.

Known within our region only from Plummers Island, the type locality. Southeastern U. S.

The species has usually been confused with *I. celosia* L. (*I. paniculata* Kuntze; *I. celosioides* L.)

2. ACNIDA L.

1. Acnida cannabina L. WATER HEMP.

Waste or swampy ground along the Potomac about Washington and Alexandria; rare. Aug.–Oct. N. H. to N. C.

3. AMARANTHUS L.

Plants with long stout spines in the leaf axils........................1. **A. spinosus.**
Plants without spines.
  Flower clusters all in the axils of the leaves, mostly shorter than the petioles.
    Plants erect; seed about 0.8 mm. broad; bracts much longer than the sepals, with long slender tips....................................2. **A. graecizans.**
    Plants prostrate; seed about 1.5 mm. broad; bracts about as long as the sepals, with short tips...3. **A. blitoides.**
  Flower clusters in long spikes arranged in panicles.
    Flowers bright purplish red; sepals shorter than the fruit..........4. **A. cruentus.**
    Flowers green or the spikes slightly tinged with red; sepals equaling or longer than the fruit.
      Sepals acute, the flower spikes slender, green or yellowish green; plants glabrous or nearly so....................................5. **A. hybridus.**
      Sepals very obtuse, often notched at the apex, the spikes very stout, whitish; plants very hairy about the inflorescence.................6. **A. retroflexus.**

1. Amaranthus spinosus L. SPINY AMARANTH.

Waste and cultivated ground. July–Oct. Native of tropical Amer.; widely naturalized in the eastern U. S.

2. Amaranthus graecizans L. TUMBLEWEED.

Waste and cultivated ground. July–Oct. Throughout the U. S. and southern Canada. (*A. albus* L.)

3. Amaranthus blitoides S. Wats.

Waste ground, especially along railroads; rare. Native of the southwestern U. S. but now adventive in many places eastward.

4. Amaranthus cruentus L.

Waste ground; infrequent. Native habitat not known but probably tropical Amer., the plant sometimes cultivated and escaping. (*A. paniculatus* L.)

5. Amaranthus hybridus L. COMMON AMARANTH OR PIGWEED.

An abundant weed in waste and cultivated ground. July–Oct. Widely dispersed in N. Amer., adventive northward. (*A. retroflexus* of Ward's Flora.)

6. Amaranthus retroflexus L.

Waste and cultivated ground; infrequent. July–Oct. Nearly throughout the U. S. and southern Can.

48. ALLIONIACEAE. Four-o'clock Family.

1. ALLIONIA L.

1. Allionia nyctaginea Michx. UMBRELLAWORT.

Along the railway embankment at Chevy Chase Lake, well established, May, 1916 (*Maxon & Standley*). Native of the western U. S.; often adventive eastward. (*Oxybaphus nyctagineus* Sweet.)

49. PHYTOLACCACEAE. Pokeweed Family.

1. PHYTOLACCA L.

1. **Phytolacca americana** L. POKEWEED.

Common in rich moist soil or waste ground. June–Sept. Eastern U. S. (*P. decandra* L.)

The young shoots are used as "greens," and are seen abundantly in Washington markets. The roots are used medicinally.

50. AIZOACEAE. Carpetweed Family.

1. MOLLUGO L.

1. **Mollugo verticillata** L. CARPETWEED.

Sandy fields or waste ground; common. July–Sept. U. S. and Mex.

51. PORTULACACEAE. Purslane Family.

Leaves all clustered at the base of the stem, the blades terete. Plants perennial; petals rose-colored; capsule opening by 3 valves................1. TALINUM.

Leaves not all clustered at the base of the stem, each stem bearing 2 or numerous leaves, the blades flat or terete.

Leaves numerous on each stem; annuals with terete or wedge-shaped leaves; petals usually yellow or red; flowers axillary; capsule opening by a lid. 2. PORTULACA.

Leaves 2 on each stem; perennials with tuberous roots, the leaves nearly linear, flat; petals pink; flowers in loose terminal răcemes: capsule opening by 3 valves..3. CLAYTONIA.

1. TALINUM Adans.

1. **Talinum teretifolium** Pursh. FAME FLOWER.

Reported by Holm from a "dry moorland beyond Silver Hill." Eastern U. S.

2. PORTULACA L.

1. **Portulaca oleracea** L. PURSLANE.

Common weed in cultivated ground. Flowering throughout the summer. U. S. and tropical Amer.

The plants are often cooked as "greens."

Portulaca grandiflora Hook., with flowers 2–3 cm. wide and terete leaves, is common in cultivation, and is sometimes found as a waif in waste ground.

3. CLAYTONIA L.

1. **Claytonia virginica** L. SPRING BEAUTY.

Moist woods; common. March–May. Eastern N. Amer.

The flowers are shown in plate 17A.

52. CORRIGIOLACEAE. Whitlow-wort Family.

Leaves elliptic or oblong. Plants annual; stipules present; sepals not awned. 1. ANYCHIA.

Leaves narrowly linear.

Sepals tipped with short spinelike awns; stipules present, white and scarious; plants perennial...2. PARONYCHIA.

Sepals not awned; stipules wanting; plants annual............3. SCLERANTHUS.

1. ANYCHIA Michx. Forked chickweed.

Plants finely hairy, rather stout, the stems with short joints, usually low and spreading; flowers nearly sessile................................1. A. polygonoides.
Plants glabrous, very slender, the stems with long joints, erect; flowers on conspicuous pedicels................................2. A. canadensis.

1. Anychia polygonoides Raf.
Dry hillsides; frequent. July–Sept. Eastern U. S. (*A. dichotoma* of some authors, not of Michaux.)

2. Anychia canadensis (L.) B. S. P.
Dry woods; frequent. July–Sept. Eastern U. S. (*A. dichotoma capillacea* Torr.)

2. PARONYCHIA Adans.

1. Paronychia dichotoma (L.) Nutt. Whitlow-wort.
On rocks at Little Falls and Great Falls. July–Oct. Md. to Tex.

3. SCLERANTHUS L.

1. Scleranthus annuus L. Knawel.
Easbys Point, north of Old Observatory; Ammendale. May. Native of Eur.; frequently adventive in N. Amer.

53. ALSINACEAE. Chickweed Family.

Plants with scarious stipules; leaves sometimes whorled, linear; petals sometimes pink.
  Leaves opposite; petals pink; styles 3................................1. **TISSA.**
  Leaves whorled; petals white; styles 5................................2. **SPERGULA.**
Plants without stipules; leaves never whorled; petals white or wanting.
  Capsule usually twice as long as the calyx or longer, cylindric, slightly curved, opening at the apex by 10 minute teeth; plants usually with viscid pubescence.
    Petals deeply cleft, or rarely wanting................................3. **CERASTIUM.**
  Capsule less than twice as long as the calyx, ovoid or oblong, not curved, opening by 6 or fewer valves; plants without viscid pubescence.
    Petals deeply 2-cleft................................4. **ALSINE.**
    Petals entire, or sometimes wanting.
      Leaves ovate; sepals acute; styles fewer than the sepals......5. **ARENARIA.**
      Leaves narrowly linear; sepals obtuse; styles as many as the sepals. 6. **SAGINA.**

1. TISSA Adans.

1. Tissa rubra (L.) Britton. Sand spurry.
Occasional in waste ground and along roadsides. Apr.–July. Widely distributed in the U. S.; perhaps native in some parts of N. Amer., but largely adventive from Eur. and Asia. (*Spergularia rubra* Presl; *Lepigonum rubrum* Fries.)

2. SPERGULA L.

1. Spergula arvensis L. Spurry.
Waste ground; Washington and Ammendale. June–July. Native of Eur.; widely naturalized in N. Amer.

One of our specimens is a very viscid plant with conspicuously margined seeds, suggesting *S. sativa* Boenn. The seeds, however, are papillose, as in *S. arvensis*. The differences between the two species do not seem very constant.

3. CERASTIUM L.

Petals more than twice as long as the sepals. Plants perennial; pedicels usually lower than the calyx: capsule about twice as long as the sepals..1. C. velutinum.

Petals shorter than or but slightly exceeding the sepals.
  Inflorescence dense, the pedicels all or nearly all much shorter than the calyx. Plants annual; leaves elliptic to broadly oval, obtuse or rounded at the apex; petals shorter than the calyx; capsule about twice as long as the sepals. 2. C. viscosum.
  Inflorescence loose and open, at least in age, the pedicels longer than the calyx.
    Pedicels several times as long as the calyx; capsule about 3 times as long as the sepals; plants annual; leaves linear-oblong, acute or acuminate; petals slightly longer than the calyx .... **3. C. longipedunculatum.**
    Pedicels twice as long as the calyx or shorter; capsule not more than twice as long as the sepals; plants perennial; leaves oblong to oval, usually obtuse; petals about equaling the calyx .... **4. C. vulgatum.**

1. **Cerastium velutinum** Raf. CHICKWEED.

Common in open rocky places along the Potomac. Apr.–May. Northern states, south to Va. (*C. oblongifolium* Torr.)

2. **Cerastium viscosum** L. MOUSE-EAR CHICKWEED.

Common in wet meadows along the upper Potomac and occasional elsewhere. Apr.–May. Native of Eur.; widely naturalized in N. Amer.

3. **Cerastium longipedunculatum** Muhl. NODDING CHICKWEED.

Moist ground, chiefly along the upper Potomac. May. Widely distributed in N. Amer. (*C. nutans* Raf.)

4. **Cerastium vulgatum** L. MOUSE-EAR CHICKWEED.

Wet meadows and waste ground about Washington; Marlboro. Apr.–May. Native of Eur.; widely naturalized in the U. S.

Cerastium semidecandrum L., an annual species with smaller leaves, was collected once by C. F. Wheeler in the Department of Agriculture grounds. A European species, sparingly naturalized from Mass. to Va.

4. ALSINE L.

Stems and leaves glabrous; leaves 1.5–8 mm. wide.
  Leaves linear or nearly so, not noticeably broadest at the base; seeds smooth. **1. A. longifolia.**
  Leaves lanceolate or elliptic, usually broadest below the middle; seeds rough. **2. A. graminea.**
Stems and leaves more or less hairy; leaves 4–40 mm. wide.
  Leaves all sessile or nearly so, obtuse or acutish; sepals sparsely hairy or glabrous; petals longer than the calyx; stamens 10 .... **3. A. pubera.**
  Leaves petioled, the lower petioles as long as the blades, the blades acute to long-acuminate; sepals densely hairy; petals shorter than the calyx; stamens 3–7. **4. A. media.**

1. **Alsine longifolia** (Muhl.) Britton. STITCHWORT.

Frequent in damp meadows. Apr.–June. Widely distributed in N. Amer ; also in Eur. and Asia. (*Stellaria longifolia* Muhl.)

2. **Alsine graminea** (L.) Britton. STARWORT.

Department of Agriculture grounds and Ammendale. Native of Eur. and Asia; sparingly adventive in eastern N. Amer. (*Stellaria graminea* L.)

3. **Alsine pubera** (Michx.) Britton. STAR CHICKWEED.

Shaded rocks and woods; common. Apr.–May. N. J. to Ind. and Ga. (*Stellaria pubera* Michx.)

The plant sometimes flowers in late autumn, specimens having been found in flower as late as November 10. In late summer the plants send up long vigorous shoots with very large broad leaves. The flowers are shown in plate 31B.

4. Alsine media L. COMMON CHICKWEED.

Common nearly everywhere in damp ground. Feb.–May. Native of Eur. and Asia; naturalized nearly throughout N. Amer. (*Stellaria media* Cyrillo.)

The plants may be found in flower at almost any time during the winter if there are a few warm days. *Stellaria neglecta* Weihe (*S. media procera* Klett & Richter) is a form with 10 stamens and somewhat crested seeds. It has been reported from our region by Holm.

Alsine aquatica (L.) Britton, with 5 styles and large leaves, was collected along the Pennsylvania Railroad, southeast of H Street Bridge, July, 1915 (*J. B. S. Norton*). Native of Eur.; sparingly adventive in N. Amer. (*Stellaria aquatica* Scop.)

5. ARENARIA L.

1. Arenaria serpyllifolia L. SANDWORT.

Common nearly everywhere. Apr.–June. Naturalized from Eur. nearly throughout eastern N. Amer.

6. SAGINA L. PEARLWORT.

Parts of the flower in 5's; seeds orange-brown, resinous-dotted......**1. S. decumbens.**
Parts of the flower in 4's; seeds dark brown, not resinous-dotted...**2. S. procumbens.**

1. Sagina decumbens (Ell.) Torr. & Gray.

About Washington; rare. May–June. Eastern U. S. (*S. apetala* of American authors.)

2. Sagina procumbens L.

Ammendale (*Brother Arsène*); brick walk in front of Army Medical Museum (*Maxon & Standley*). Apr.–May. Eastern U. S.

54. SILENACEAE. Pink Family.

Calyx with twice as many ribs or nerves as teeth.
  Lobes of the calyx as long as the tube or often much longer; petals much shorter than the calyx lobes, purple............................**1. AGROSTEMMA.**
  Lobes of the calyx much shorter than the tube; petals usually much longer than the calyx lobes, or rarely wanting.
    Styles 3 or rarely 4..**2. SILENE.**
    Styles 5..**3. LYCHNIS.**
Calyx with 5 nerves or ribs, or nerveless, or with very numerous nerves (more than twice as many as the teeth).
  Plants more or less hairy, especially about the flowers; leaves linear; calyx finely many-nerved, bracted at the base...........................**4. DIANTHUS.**
  Plants perfectly glabrous; leaves much broader than linear; calyx not bracted at the base.
    Calyx sharply 5-angled; pedicels usually much longer than the calyx; leaves sessile and clasping......................................**5. VACCARIA.**
    Calyx not angled; pedicels much shorter than the calyx; at least the lower leaves short-petioled.....................................**6. SAPONARIA.**

1. AGROSTEMMA L.

1. Agrostemma githago L. CORN COCKLE.

Frequent in fields and waste ground. May–July. Native of Eur. and northern Asia; naturalized in grain fields nearly throughout the U. S. (*Lychnis githago* Scop.)

The seeds are poisonous.

2. SILENE L.

Leaves in whorls of 4, ovate-lanceolate, long-acuminate. Stems finely hairy; calyx inflated; petals white...**1. S. stellata.**

Leaves opposite, never whorled.
  Stems glabrous, or rarely with a few hairs near the inflorescence.
    Plants glaucous; flowers numerous, in loose terminal panicles......**2. S. latifolia.**
    Plants green; flowers few, axillary or terminal, usually solitary.........**3. S. alba.**
  Stems hairy, at least near the base.
    Plants perennial; inflorescence dense, the petals large, pink, showy. **4. S. caroliniana.**
    Plants annual; inflorescence loose and open, the petals white, or pinkish and very small.
      Plants stout, viscid-hairy throughout; petals white; calyx 20–30 mm. long. **5. S. noctiflora.**
      Plants slender, finely hairy below, the upper internodes glabrous except for glutinous rings; petals pink, inconspicuous; calyx 4–6 mm. long. **6. S. antirrhina.**

1. Silene stellata (L.) Ait. STARRY CAMPION.

Woods, especially along the upper Potomac; common. June–Aug. Eastern U. S.

Silene armeria L., sweet william catchfly, was collected by Ward, June 2, 1878, in the Insane Asylum woods. Native of Eur.; a glabrous annual, the pink flowers in dense cymes.

2. Silene latifolia (Mill.) Britten & Rendle. BLADDER CAMPION.

Woodside and Ammendale. Native of Eur. and Asia; adventive in many part of the U. S.

3. Silene alba Muhl. SNOWY CAMPION.

Islands of the Potomac and on the flats below High Island; also near Glen Echo and in Rock Creek Park; abundant along the Patuxent at Laurel. June–July. Northern states, south to Md. (*S. nivea* Otth.)

4. Silene caroliniana Walt. WILD PINK.

Sandy soil; rather common, especially along the upper Potomac. Apr.–June. Eastern U. S. (*S. pennsylvanica* Michx.)

5. Silene noctiflora L. NIGHT-FLOWERING CATCHFLY.

Well established about Beltsville; occasional elsewhere. Native of Eur.; adventive in many parts of the U. S.

6. Silene antirrhina L. SLEEPY CATCHFLY.

Common in dry or sterile soil. May–June. Widely distributed in N. Amer.

S. antirrhina divaricata Robinson, with more slender spreading pedicels and apetalous flowers, has been collected on High Island and Plummers Island, and at Chain Bridge.

3. LYCHNIS L.

1. Lychnis alba Mill. WHITE CAMPION.

Bunker Hill and Chevy Chase Lake. Native of Eur.; sparingly adventive in the northeastern U. S. (*L. vespertina* Sibth.)

The flowers in this species are pistillate and staminate, the two kinds borne on the same or separate plants.

A single specimen of *Lychnis flos-cuculi* L. was collected at "Washington. Introduced," in 1869 by H. Brummel. Native of Eur.; cultivated and rarely adventive in the northeastern U. S.

4. DIANTHUS L.

1. Dianthus armeria L. DEPTFORD PINK.

Usually in dry soil; common. May–July. Native of Eur.; naturalized in eastern N. Amer.

A close relative of the common cultivated sweet william (*Dianthus barbatus* L.). The carnation, also, belongs to this genus.

5. VACCARIA Medic.

1. Vaccaria vulgaris Host. COWHERB.

Occasional about Washington and Rosslyn. Adventive from Eur. in many parts of the U. S. (*Saponaria vaccaria* L.; *V. vaccaria* Britton.)

6. SAPONARIA L.

1. Saponaria officinalis L. BOUNCING BET.

Common in waste ground and along roadsides. June–Oct. Native of Eur.; widely naturalized in the U. S.

The flowers are often double; they vary in color from almost white to deep pink.

55. NYMPHAEACEAE. Waterlily Family.

Petals very small and thick, green; sepals much larger than the petals, green, tinged with yellow; fruit naked; leaves usually longer than broad, green. 1. **NYMPHAEA.**

Petals large and showy, white or pinkish; sepals equaling or shorter than the petals, green; fruit covered with the bases of the petals; leaves as broad as long, purple beneath ....2. **CASTALIA.**

1. NYMPHAEA L.

1. Nymphaea advena Soland. YELLOW PONDLILY.

Shallow water or marshes; common. May–Sept. Northern states, south to N. C. (*Nuphar advena* Ait.)

A colony of plants is shown in plate 24.

2. CASTALIA Salisb.

1. Castalia odorata (Dryand.) Woodv. & Wood. WHITE WATERLILY.

Floating in water, Fourmile Run, Laurel, near Alexandria, and probably elsewhere; formerly found in pools at Great Falls. June–July. Eastern N. Amer. (*Nymphaea odorata* Ait.)

56. CABOMBACEAE. Water-shield Family.

Leaves mostly dissected into numerous capillary lobes; stamens 3–6..1. **CABOMBA.**

Leaves oval, the petiole attached to the middle of the blade; stamens 12–18. 2. **BRASENIA.**

1. CABOMBA Aubl.

1. Cabomba caroliniana A. Gray.

Well established formerly in the fishponds in Potomac Park, but these have been filled and the plants destroyed; reported by Steele from the Eastern Branch. Southeastern U. S.

Sometimes known as Washington plant.

2. BRASENIA Schreb.

1. Brasenia schreberi Gmel. WATER-SHIELD.

Edges of pools along the Potomac near Little Falls; Laurel; rare. June–July. Eastern N. Amer. and on the Pacific coast; also Cuba and Mex. (*B. peltata* Pursh.)

57. CERATOPHYLLACEAE. Hornwort Family.

1. CERATOPHYLLUM L. HORNWORT.

1. Ceratophyllum demersum L.

Ponds and sluggish streams near the Potomac from Plummers Island southward; frequent. Throughout the U. S.

Readily propagating by buds; rarely fruiting.

58. RANUNCULACEAE. Crowfoot Family.

Stem leaves all opposite or whorled (or only part of them opposite in *Ficaria*, with very short stems, the flowers often appearing to be on naked scapes).

Leaves of the stem whorled, usually only a single whorl (sometimes 2 whorls in *Anemone*), sometimes reduced to sepal-like bracts borne at the base of the flower.

Plants wholly glabrous; roots tuberous; flowers in a terminal umbel. Sepals white; leaves compound ....**7. SYNDESMON.**

Plants more or less hairy; roots fibrous; flowers solitary.

Basal leaves 3-lobed, the lobes rounded at the apex; stem leaves reduced to 3 entire bracts borne at the base of the flower..............**6. HEPATICA.**

Basal leaves compound or with numerous lobes, the divisions acute; stem leaves well developed, deeply lobed or compound, the flowers on long naked stalks...**5. ANEMONE.**

Leaves of the stem opposite, usually of numerous pairs, never whorled.

Plants wholly glabrous; leaves heart-shaped, the blades much shorter than the petioles; roots fleshy; fruits not tailed.......................**10. FICARIA.**

Plants more or less hairy; leaves never heart-shaped, sessile or the petioles much shorter than the blades; roots not fleshy; fruits with long hairy tails.

Flowers panicled, the sepals 1 cm. long or shorter, spreading, thin.
12. CLEMATIS.

Flowers solitary on long stalks, the sepals 1.5–3 cm. long, erect, the tips recurved, thick and leathery.....................................**13. VIORNA.**

Stem leaves all alternate, sometimes only one.

Flowers in racemes. Leaves compound or deeply lobed.

Flowers irregular, one of the sepals produced into a long spur; leaves not over 10 cm. wide ....**3. DELPHINIUM.**

Flowers regular, none of the sepals spurred; leaves often 30 cm. wide or larger.
1. CIMICIFUGA.

Flowers variously arranged, but never in racemes.

Flowers all or mostly on recurved stalks, blue or red and yellow; fruit a many-seeded pod.

Leaves simple, deeply lobed; flowers blue, very irregular, one of the sepals large and hooded.................................**4. ACONITUM.**

Leaves compound (except the uppermost), composed of slender-stalked leaflets; flowers red and yellow, the sepals produced into long slender spurs.
2. AQUILEGIA.

Flowers on straight, erect or ascending stalks, yellow or white; fruit of achenes.

Petals present, yellow; basal leaves comparatively small, rarely 10 cm. wide.
Leaves simple or compound.........................**9. RANUNCULUS.**

Petals none, the sepals often petal-like, green or white; basal leaves large, usually 20 cm. wide or larger.

Leaves simple, deeply lobed; flower stalks finely hairy.
8. TRAUTVETTERIA.

Leaves compound, composed of numerous leaflets; flower stalks glabrous.
11. THALICTRUM.

1. CIMICIFUGA L.

1. Cimicifuga racemosa (L.) Nutt. Black snakeroot.

Rich woods; common. June–July. Eastern U. S.

2. AQUILEGIA L.

1. Aquilegia canadensis L. COLUMBINE.

Cliffs and rocky woods, chiefly along the upper Potomac; common. Apr.–May. Eastern N. Amer.

The columbine most commonly cultivated in gardens is an Old World species, *Aquilegia vulgaris* L.

3. DELPHINIUM L. LARKSPUR.

Plants annual; stem leaves mostly sessile or nearly so, the lobes 1 mm. wide or narrower; fruit a single pod..**1. D. ajacis.**

Plants perennial, with tuberous roots; stem leaves long-petioled, the lobes broad, 2 mm. wide or often much wider; fruit of 3 pods ....**2. D. tricorne.**

1. Delphinium ajacis L. ROCKET LARKSPUR.

Fields and waste ground; occasional. June–Aug. Native of Eur.; widely adventive in N. Amer. (*D. consolida* of Ward's Flora.)

Flowers blue, pink, or white.

2. Delphinium tricorne Michx. DWARF LARKSPUR.

Islands of the Potomac and at a few other places along the river; rare and now almost extinct. Apr.–May. Pa. to Ga. and westward.

4. ACONITUM L.

1. Aconitum uncinatum L. MONKSHOOD.

Low woods and thickets; infrequent. Sept. Pa. to Ga. and westward.

A form with nearly white flowers has been found by Titus Ulke.

5. ANEMONE L. ANEMONE.

Stem leaves not stalked; basal leaves simple, deeply lobed. Fruit pubescent with straight hairs..**1. A. canadensis.**

Stem leaves stalked; basal leaves compound.

Plants 30–60 cm. high or larger, very hairy, with thick erect rootstocks; sepals (petal-like) silky-hairy outside..............................**2. A. virginiana.**

Plants 10–20 cm. high, nearly glabrous, with very slender creeping rootstocks; sepals glabrous..**3. A. quinquefolia.**

1. Anemone canadensis L.

Woods below Congress Heights, May, 1893 (*Steele*). Widely distributed in N. Amer.

2. Anemone virginiana L.

Woods and meadows, chiefly along the upper Potomac; frequent. June–Aug. Eastern N. Amer.

3. Anemone quinquefolia L. WOOD ANEMONE.

Woods; occasional. Apr.–May. Eastern N. Amer. (*A. nemorosa* of Ward's Flora.)

6. HEPATICA Mill.

1. Hepatica americana Ker. HEPATICA.

Woods; common. Feb.–Apr. Eastern N. Amer. (*Anemone hepatica* of Ward's Flora; *H. hepatica* and *H. triloba* of American authors.)

One of the very earliest of spring flowers. Flowers bluish, pinkish, or nearly white. The flowers are shown in plate 25A.

7. SYNDESMON Hoffmannsegg.

1. Syndesmon thalictroides (L.) Hoffmannsegg. RUE ANEMONE.

Woods; common. March–Apr. Eastern U. S. (*Thalictrum anemonoides* Michx.; *Anemonella thalictroides* Spach.)

Double-flowered plants occur occasionally.

8. TRAUTVETTERIA Fisch. & Mey.

1. Trautvetteria carolinensis (Walt.) Vail. FALSE BUGBANE.

Low wet ground; Mount Vernon; Difficult Run. June–July. Southern states, north to Pa.

9. RANUNCULUS L. BUTTERCUP.

Basal leaves, at least most of them, entire or shallowly toothed.
  Upper stem leaves entire or very shallowly toothed. Plants glabrous.
    Plants annual; flowers 4–6 mm. broad; fruits not beaked..........**1. R. pusillus.**
    Plants perennial, the stems rooting at the joints; flowers 12–15 mm. broad; fruits beaked..........**2. R. obtusiusculus.**
  Upper stem leaves compound or deeply lobed.
    Stems glabrous; basal leaves cordate at the base; receptacle hairy. **3. R. abortivus.**
    Stems loosely hairy, at least below; leaves not cordate at the base; receptacle glabrous..........**4. R. micranthus.**
Basal leaves compound or deeply lobed.
  Leaves glabrous; fruits not margined. Petals about as long as the sepals. **5. R. sceleratus.**
  Leaves hairy, at least along the veins beneath; fruits with an evident margin.
    Beak of the fruit long, slender, and recurved; basal leaves lobed, not divided. Petals shorter than the sepals..........**6. R. recurvatus.**
    Beak of the fruit long and straight, or very short and recurved; basal leaves usually divided to the base or composed of distinct leaflets.
      Beak of the fruit long and straight. Petals much longer than the sepals.
        Roots slender; plants, at least in age, producing long runners; petals broadly obovate..........**7. R. septentrionalis.**
        Roots fleshy-thickened; plants erect or nearly so, without runners; petals oblong..........**8. R. hispidus.**
      Beak of the fruit short and recurved.
        Plants with long runners. Petals much longer than the sepals..**9. R. repens.**
        Plants erect or ascending, without runners.
          Petals about 3 mm. long; head of fruits cylindric, much longer than thick. **10. R. pennsylvanicus.**
          Petals 7–12 mm. long; head of fruits globose, about as thick as long.
            Stem bulblike at the base; middle division of the basal leaves stalked; sepals reflexed, almost as long as the petals..........**11. R. bulbosus.**
            Stem not bulblike at the base; divisions of the basal leaves all sessile; sepals not reflexed, much shorter than the petals..........**12. R. acris.**

1. Ranunculus pusillus Poir.

Marshes along the Potomac and Eastern Branch. Apr.–May. Eastern U. S.

2. Ranunculus obtusiusculus Raf.

Marshes along the Eastern Branch and Hunting Creek. June–July. Eastern U. S. (*R. ambigens* S. Wats.)

3. Ranunculus abortivus L.

Woods or moist soil; common. Apr.–May. Eastern N. Amer. (*R. ruderalis* Greene.)

R. ruderalis was based upon specimens from Linden and Takoma Park. It is a form with dull green leaves, those of the more common form being lustrous.

4. Ranunculus micranthus Nutt.

Rich woods along the upper Potomac; frequent. Apr.–May. Eastern N. Amer., west to Colo. (*R. abortivus micranthus* A. Gray; *R. holmii* Greene.)

R. holmii was based upon material from our region.

5. Ranunculus sceleratus L.

Marshes along the Potomac and Eastern Branch; frequent. May–July. Widely distributed in temperate N. Amer.; also Eur. and Asia.

6. Ranunculus recurvatus Poir.

Damp woods and thickets; common. Apr.–May. Eastern N. Amer.

7. Ranunculus septentrionalis Poir.

Low ground along the Potomac; common. Apr.–May. Eastern N. Amer. (*R. repens nitidus* and *R. repens*, in part, of Ward's Flora.)

8. Ranunculus hispidus Michx.

Usually in dry woods and thickets; common. Apr.–May. Eastern U. S. (*R. repens hispidus* and *R. repens*, in part, of Ward's Flora.)

9. Ranunculus repens L.

Marshes or waste ground; occasional. Apr.–June. Widely distributed in N. Amer., largely naturalized from Eur.

10. Ranunculus pennsylvanicus L. f.

Swamp near Aqueduct Bridge, August, 1888 (*Holm*). Widely distributed in temperate N. Amer.

11. Ranunculus bulbosus L.

Fields and waste ground; abundant. Apr.–June. Native of Eur.; widely naturalized in eastern N. Amer.

12. Ranunculus acris L.

Fields and waste ground; common. May–July. Native of Eur.; widely naturalized in N. Amer.

10. FICARIA Huds.

1. Ficaria verna Huds. LESSER CELANDINE.

Shaded banks, Rock Creek Park. Apr. Native of Eur. and Asia; occasionally adventive in the northeastern U. S. (*Ranunculus ficaria* L.; *F. ficaria* Karst.)

11. THALICTRUM. MEADOW-RUE.

Leaflets waxy-glandular beneath. Fruits not stalked; filaments slender, drooping. **1. T. revolutum.**

Leaflets glabrous beneath or very finely hairy, never glandular.

Filaments club-shaped, not drooping, the apex nearly as wide as the anthers.

Fruits not stalked; leaflets mostly longer than broad, usually finely hairy beneath .... **2. T. polygamum.**

Filaments threadlike, soon drooping.

Stem leaves on long slender stalks; plants flowering in April or early May. Leaflets glabrous, mostly as broad as long; fruits not stalked, not glaucous. **3. T. dioicum.**

Stem leaves mostly sessile, sometimes on short stout stalks; plants flowering mostly from late May to July.

Fruits sessile; leaflets mostly longer than broad .... **4. T. dasycarpum.**

Fruits short-stalked; leaflets mostly as broad as long or broader. **5. T. caulophylloides.**

1. Thalictrum revolutum DC.

Woods and low ground; common. June. Eastern U. S. (*T. purpurascens ceriferum* Austin.)

2. Thalictrum polygamum Muhl.

Swamps or low woods; frequent. May–July. Eastern N. Amer. (*T. cornuti* of Ward's Flora.)

3. Thalictrum dioicum L.

Moist woods or thickets along Rock Creek and the upper Potomac. Apr.–May. Eastern U. S.

4. Thalictrum dasycarpum Fisch. & Lall.

Woods and thickets; frequent. May–July. Eastern U. S. (*T. purpurascens* of Ward's Flora, in part.)

5. Thalictrum caulophylloides Small.

Low ground along the upper Potomac; common. May–June. Md. to Tenn. (*T. purpurascens* of Ward's Flora.)

12. CLEMATIS L.

1. Clematis virginiana L. VIRGIN'S-BOWER.

Marshes or thickets along the Potomac and Eastern Branch; occasional. Aug.–Sept. Eastern N. Amer.

Clematis paniculata Thunb. is reported to have escaped at several localities about Chevy Chase (*E. T. Wherry*). Native of Japan; widely cultivated. Distinguished from *C. virginiana* by having more than 3, entire leaflets.

13. VIORNA Reichenb. LEATHER-FLOWER.

Plants erect; leaves sessile or nearly so, simple, entire..............**1. V. ochroleuca.**

Plants climbing; leaves petioled, compound, composed of 3 or more leaflets, these often lobed..**2. V. viorna.**

1. Viorna ochroleuca (Ait.) Small.

Wooded hillsides along the Virginia side of the Potomac; occasional. Apr.–May. Staten Isl., N. Y., to Ga. (*Clematis ochroleuca* Ait.)

2. Viorna urnigera Spach.

Woods and thickets along the upper Potomac; frequent. June. Pa. to Ind. and Ga. (*Clematis viorna* L.; *V. viorna* Small.)

59. BERBERIDACEAE. Barberry Family.

Leaves simple, deeply lobed, the blades peltate (the petiole not attached at the base of the blade but above the base). Plants with 2 leaves at the top of a stout stem, a single large white flower borne between the leaves; fruit yellowish green, about 5 cm. long, pulpy......................................**1. PODOPHYLLUM.**

Leaves compound, of 2 or more leaflets, never peltate.

Leaflets 2, entire: leaves all basal; flowers solitary, on long scapes, white, showy; fruit a capsule, opening by a lid........................**2. JEFFERSONIA.**

Leaflets more than 2, coarsely lobed; leaves partly borne on the stems; flowers in small panicles, small, purplish green; fruit fleshy, blue..**3. CAULOPHYLLUM.**

Berberis vulgaris L., the barberry, has been collected as an escape at two or three stations within our range. Native of Eur.; commonly cultivated and sometimes escaping. Several other species of *Berberis* (with simple leaves) and of the closely related genus *Odostemon* (with pinnate leaves) are frequent in cultivation.

1. PODOPHYLLUM L.

1. Podophyllum peltatum L. MAY-APPLE.

Woods and thickets; common. Apr.–May; fr. July. Eastern N. Amer.

Known also as mandrake. The large fruits are edible. The roots are used in medicine. The flowers are shown in plate 26.

2. JEFFERSONIA Barton.

1. Jeffersonia diphylla (L.) Pers. TWIN-LEAF.

Islands of the Potomac; rare, but locally abundant. Apr. N. Y. to Iowa and Tenn.

The genus was named in honor of Thomas Jefferson. Plants in flower are shown in plate 28B.

3. CAULOPHYLLUM Michx.

1. **Caulophyllum thalictroides** (L.) Michx. Blue cohosh.

Rich woods on the islands and banks of the upper Potomac; rare. Apr. Eastern N. Amer.

60. MENISPERMACEAE. Moonseed Family.

1. MENISPERMUM L.

1. **Menispermum canadense** L. Moonseed.

Low thickets, climbing over shrubs; along Rock Creek and the upper Potomac. May–June; fr. autumn. Eastern N. Amer.

61. MAGNOLIACEAE. Magnolia Family.

Leaves oval or oblong, entire; flowers white, very fragrant; anthers facing in; fruit an ovoid cone of rose-colored fleshy carpels, at length turning dark brown. **1. MAGNOLIA.**

Leaves lobed, truncate or broadly notched at the apex; flowers greenish yellow, orange inside, slightly fragrant; anthers facing out; fruit a dry oblong cone. **2. LIRIODENDRON.**

1. MAGNOLIA L.

1. **Magnolia virginiana** L. Swamp magnolia.

Swamps and marshy places bordering streams, especially along Indian Creek, from Beltsville to Kenilworth and southeastward. May–June. Mass. to Fla. (*M. glauca* L.)

The bark, rich in tannin, was used as a tonic and febrifuge, and its pleasant aromatic taste gave to the tree the name swamp sassafras. The fresh leaves and bark were used for dyeing. Also known as sweet bay.

2. LIRIODENDRON L.

1. **Liriodendron tulipifera** L. Tulip tree.

Rich soil throughout the region. May–June. Eastern N. Amer.

A magnificent tree, sometimes 40 meters high, valued for its timber, which is commonly called poplar or white wood.

62. ANNONACEAE. Custard apple Family.

1. ASIMINA Adans.

1. **Asimina triloba** Dunal. Pawpaw.

Moist woods; common, especially along the banks of streams. Apr.–May. Southern states, north to Lake Erie.

Flowers appearing with the leaves, sometimes abnormal, with 9 instead of 6 petals, these pale yellowish green at first, turning dark purple or maroon and increasing in size. Fruit usually solitary, but sometimes in clusters of 2 to 5 from the same flower, edible, turning brown or black after the first frost. A food-staple of the aborigines. The generic name is derived from the Indian *Assimin*, whence the common name *Assiminier* applied to the tree by the early French colonists. The English common name is misleading, since the species is not even remotely related to the true pawpaw, or papaya, of the tropics (*Carica papaya*).

63. LAURACEAE. Laurel Family.

Plants trees or shrubs, with rough bark; leaves normally 3-lobed; staminate flowers with 4-celled anthers; pistillate flowers with 6 imperfect stamens and an ovoid ovary; fruit blue..**1. SASSAFRAS.**

Plants shrubs, with smooth bark; leaves entire; staminate flowers with 2-celled anthers; pistillate flowers with 12–15 imperfect stamens and a globose ovary; fruit bright red..2. **BENZOIN.**

1. SASSAFRAS Nees.

1. **Sassafras variifolium** (Salisb.) Kuntze. SASSAFRAS.

Very common in woods and along roadsides, springing up in waste places like a weed. Eastern N. Amer. (*S. officinale* Nees & Eberm.; *S. sassafras* Karst.)

A tree, usually of moderate size, with us rarely exceeding 10 meters; aromatic; flowers appearing about the middle of April, before the leaves; leaves variable on the same branch, sometimes entire or mitten-shaped instead of 3-lobed, used like bay leaves for flavoring food; bark of root used for making tea and for dyeing, the source of an aromatic oil used in perfumery, and for flavoring sweetmeats and medicines. A few trees are shown in plate 27.

2. BENZOIN Fabr.

1. **Benzoin aestivale** (L.) Nees. SPICE BUSH.

Common in moist woods and swamps and along streams. Eastern N. Amer. (*Lindera benzoin* Blume; *B. benzoin* Coulter.)

A spicy, fragrant bush, 1–4 meters high; flowers appearing in April, before the leaves; fruit ripe in August. Used by the Indians and early settlers as a remedy for fevers and therefore sometimes called fever bush; also wild allspice, from the use of the berries to take the place of the true allspice of the West Indies.

64. PAPAVERACEAE. Poppy Family.

Leaves all basal, glabrous; plants perennial, with thick creeping rootstocks; flowers white..1. **SANGUINARIA.**

Leaves, at least part of them, scattered along the stems, hairy; plants never with creeping rootstocks; flowers yellow or red.

  Flowers solitary, on very long stalks, red; fruit opening only at the top, less than twice as long as thick...2. **PAPAVER.**

  Flowers in umbels, on short stalks, yellow; fruit opening for its whole length, several times as long as thick................................3. **CHELIDONIUM.**

1. SANGUINARIA L.

1. **Sanguinaria canadensis** L. BLOODROOT.

Woods; common. March–Apr. Eastern N. Amer. (*S. dilleniana* Greene.)

Juice orange-red. The flowers are shown in plate 28A.

Argemone mexicana L., prickly poppy, has been collected a few times in waste ground about Washington. Native of the American tropics; occasionally adventive in the eastern U. S. Leaves spiny, blotched with white.

2. PAPAVER L. POPPY.

1. **Papaver dubium** L.

Fields and waste ground; infrequent. May–June. Native of Eur.; adventive in the eastern U. S.

3. CHELIDONIUM L.

1. **Chelidonium majus** L. CELANDINE.

Low woods and waste ground along the Potomac; occasional. Apr.–May. Native of Eur.; naturalized in the eastern U. S.

65. FUMARIACEAE. Fumitory Family.

Plants perennial, with tuberous or bulblike roots; leaves all basal: flowers with 2 spurs at the base..1. **BIKUKULLA.**

Plants annual or perennial, with fibrous roots; leaves mostly scattered along the branched stems; flowers with only one spur at the base.

Flowers yellow; fruit several times as long as broad, several-seeded. 2. **CAPNOIDES.**

Flowers purplish; fruit globose, 1-seeded..........................3. **FUMARIA.**

1. BIKUKULLA Adans.

Roots with tubers; spurs much shorter than the upper part of the flower. 1. **B. canadensis.**

Roots bulblike; spurs almost or quite as long as the upper part of the flower. 2. **B. cucullaria.**

1. **Bikukulla canadensis** (Goldie) Millsp. SQUIRREL CORN.

Rich woods on the islands and banks of the upper Potomac; rare. Apr. Eastern N. Amer. (*Dicentra canadensis* Walp.)

Flowers white tinged with pink. The flowers are shown in plate 29B.

2. **Bikukulla cucullaria** (L.) Millsp. DUTCHMAN'S BREECHES.

Rich woods along the upper Potomac; occasional. Apr. Eastern N. Amer. (*Dicentra cucullaria* Bernh.)

Flowers white tinged with pale yellow. The flowers are shown in plate 29A.

2. CAPNOIDES Adans.

1. **Capnoides flavulum** (Raf.) Kuntze. CORYDALIS.

Woods; common along the Potomac, occasional elsewhere. March–May. Northern states, south to Va. (*Corydalis flavula* DC.)

3. FUMARIA L.

1. **Fumaria officinalis** L. FUMITORY.

Occasional in waste ground about Washington. May–June. Native of Eur.; adventive in eastern N. Amer.

66. BRASSICACEAE. Mustard Family.

Leaves palmately divided, the root leaves with 3 leaflets; plants with fleshy tuberlike rootstocks. Flowers white or purple; pods long and narrow..20. **DENTARIA.**

Leaves simple or pinnately divided, when pinnate the leaflets usually more than 3; plants never with fleshy rootstocks.

Upper stem leaves sessile and clasping at the base, with conspicuous auricles, entire or toothed, the lower leaves various.

Petals yellow. Pods long and slender; lower leaves toothed or lobed. 22. **BRASSICA.**

Petals white.

Lower leaves pinnately lobed; pods triangular.....................4. **BURSA.**

Lower leaves merely toothed; pods not triangular.

Pods several times longer than broad, flat......................18. **ARABIS.**

Pods less than twice as long as broad, often as broad as long.

Upper leaves entire; stems long-hairy below; pods obovoid, turgid, rounded at the apex..3. **CAMELINA.**

Upper leaves finely or coarsely toothed; stems glabrous below or with very short minute hairs; pods flattened, notched or pointed at the apex.

Pods winged, deeply notched at the apex, with 2 or more seeds in each cell; stems glabrous..................................10. **THLASPI.**

Pods not winged, pointed or shallowly notched, with one seed in each cell; stems finely hairy, at least below............9. **LEPIDIUM.**

Upper stem leaves petioled or sessile, never clasping.
  Leaves entire or toothed, never pinnately lobed or divided.
    Plants with naked stems, the leaves in a basal rosette. Petals white; pods oval or oblong, about twice as long as wide, flat................**1. DRABA.**
    Plants with leafy stems.
      Leaves glabrous. Plants perennial; petals white.
        Upper leaves petioled; plants with the odor of garlic. Pods long and slender..**11. ALLIARIA.**
        Upper leaves sessile; plants not with the odor of garlic.
          Basal leaves much longer than broad, mostly 20–30 cm. long or larger, conspicuously toothed; pods less than twice as long as thick. **7. ARMORACIA.**
          Basal leaves mostly as broad as long, rarely over 5 cm. long, usually entire; pods much more than twice as long as thick. **19. CARDAMINE.**
      Leaves, at least the lower ones, conspicuously hairy.
        Petals pink or purple, about 2 cm. long; pods long and slender, swollen over the seeds. Leaves conspicuously toothed.......**15. HESPERIS.**
        Petals white or yellow, not more than 0.5 cm. long; pods not swollen over the seeds.
          Petals yellow; pods long and slender, not flattened; leaves entire or nearly so..**12. CHEIRINIA.**
          Petals white; pods about as broad as long, or long, slender, and flat.
            Pods obovoid, nearly as broad as long; leaves all linear or nearly so, entire...**2. KONIGA.**
            Pods long and slender, flat; leaves, at least most of them, broader than linear, often toothed.
              Plants annual, with a conspicuous basal rosette of leaves; leaves mostly entire; pods less than 2 cm. long...**16. ARABIDOPSIS.**
              Plants perennial or annual, usually without basal rosettes of leaves; leaves all or nearly all toothed; pods over 3 cm. long. **18. ARABIS.**
  Leaves, at least some of them, pinnately lobed or divided.
    Plants with conspicuously dimorphous leaves, growing in water, the submerged leaves dissected into threadlike segments. Petals white; pods short and thick, less than twice as long as thick...................**8. NEOBECKIA.**
    Plants not with dimorphous leaves, none of the leaves dissected into threadlike segments.
      Upper stem leaves linear or nearly so, most of them entire. Petals white.
        Pods as broad as long, shorter than the pedicels; plants annual; petals less than 2 mm. long, sometimes wanting.................**9. LEPIDIUM.**
        Pods several times longer than broad, much longer than the pedicels; petals 5–7 mm. long..**18. ARABIS.**
      Upper stem leaves broader than linear, toothed or pinnately lobed or divided. Petals white or purple.
        Pods less than twice as long as thick; basal leaves simple. Plants with thick fleshy roots; petals white..................**7. ARMORACIA.**
        Pods several times as long as thick; basal or lower leaves pinnately divided.
          Upper leaves simple; pods not splitting when ripe; petals mostly purple...**23. RAPHANUS.**
          Upper leaves pinnately divided; pods splitting when ripe; petals white.
            Pods flat, straight; leaflets of the upper leaves more than twice as long as broad; plants not floating in water...**19. CARDAMINE.**

Pods not flattened, curved; leaflets less than twice as long as broad, often as broad as long; plants usually floating in water. **6. SISYMBRIUM.**

Petals yellow.

Petals 8–15 mm. long.

Pods slender, not over 1 mm. thick; upper leaves pinnately divided into linear lobes..**14. NORTA.**

Pods stout, 2–6 mm. thick; upper leaves with very broad lobes, or sometimes merely toothed.

Beak of the pod flattened or angled; pods often hairy. **21. SINAPIS.**

Beak of the pod not flattened or angled; pods glabrous. **22. BRASSICA.**

Petals 5 mm. long or shorter.

Plants very hairy; pedicels in fruit closely appressed to the stem. **13. ERYSIMUM.**

Plants glabrous or nearly so; pedicels spreading or ascending, never closely appressed.

Pods less than 1.5 cm. long, on slender pedicels; terminal lobe of the leaf much longer than broad....................**5. RADICULA.**

Pods mostly over 3 cm. long, on very stout pedicels; terminal lobe of the leaf often as broad as long....................**17. CAMPE.**

1. DRABA L.

1. Draba verna L. WHITLOW GRASS.

Dry or moist soil; common. March–Apr. Native of Eur. and Asia; widely naturalized in N. Amer.

The plants are very variable, especially in the form of the pods.

2. KONIGA Adans.

1. Koniga maritima (L.) R. Br. SWEET ALYSSUM.

Waste ground about Washington and Alexandria; obtained at three stations in 1915. Native of Eur.; commonly cultivated and sometimes escaping. (*Lobularia maritima* Desv.)

3. CAMELINA Crantz.

1. Camelina microcarpa Andrzej. FALSE FLAX.

Roadsides, grain fields, and waste ground; frequent. May–June. Native of Eur.; widely naturalized in N. Amer. (*C. sativa* of Ward's Flora.)

4. BURSA Weber.

1. Bursa bursa-pastoris (L.) Weber. SHEPHERD'S-PURSE.

Fields and waste ground; common. March–June. Native of Eur.; widely naturalized in N. Amer. (*Capsella bursa-pastoris* Medic.)

The leaves are often used as "greens." The common form of this plant has a triangular pod, acute at the upper corners. Another form of occasional occurrence has an obcordate pod; the stems are usually lower and tinged with red.

5. RADICULA Hill. YELLOW CRESS.

Flowers nearly sessile. Plants annual or biennial, glabrous......**1. R. sessiliflora.**

Flowers long-pediceled.

Plants perennial, with slender creeping rootstocks; petals about 4 mm. long, bright yellow; leaves mostly pinnate-parted, with narrow segments; pods slender, 8–12 mm. long...**2. R. sylvestris.**

Plants annual or perennial, with fibrous roots; petals not over 2 mm. long, dull yellow or greenish; leaves mostly pinnate-lobed, with broad segments; pods thick, 7 mm. long or mostly shorter.
  Plants very hairy, erect; pods almost as broad as long............**3. R. hispida.**
  Plants glabrous or nearly so; pods twice as long as broad or longer.
    Stems erect; pedicels usually longer than the pods..........**4. R. palustris.**
    Stems spreading; pedicels shorter than the pods...............**5. R. obtusa.**

1. Radicula sessiliflora (Nutt.) Greene.

Reported by Holm from flats below Chain Bridge. Southern states, north to Va. (*Nasturtium sessiliflorum* Nutt.; *Roripa sessiliflora* Hitchc.)

2. Radicula sylvestris (L.) Druce.

Open fields and low ground; frequent. May–July. Native of Eur. and Asia; widely naturalized in eastern N. Amer. (*Nasturtium sylvestre* R. Br.; *Roripa sylvestris* Besser.)

3. Radicula hispida (Desv.) Britton.

Wet ground along the Eastern Branch. June–Aug. Widely distributed in N. Amer.; also in Eur. (*Nasturtium hispidum* DC.; *Roripa hispida* Britton; *Radicula palustris hispida* Robinson.)

4. Radicula palustris (L.) Moench.

Low ground along the Potomac. June–Sept. Widely distributed in N. Amer. in part naturalized from Eur. (*Nasturtium palustre* DC.; *Roripa palustris* Besser.)

5. Radicula obtusa (Nutt.) Greene.

Collected several times about Washington, the localities not indicated; doubtless adventive. Native farther west. (*Nasturtium obtusum* Nutt.; *Roripa obtusa* Britton.)

6. SISYMBRIUM L.

1. Sisymbrium nasturtium-aquaticum L. WATERCRESS.

In streams; occasional. May–autumn. Native of Eur. and Asia; widely naturalized in N. Amer. (*Nasturtium officinale* R. Br.; *Radicula nasturtium-aquaticum* Britten & Rendle.)

7. ARMORACIA Gaertn., Mey. & Schreb.

1. Armoracia rusticana Gaertn., Mey. & Schreb. HORSERADISH.

Occasional by roadsides and in waste ground. Native of Eur.; common in cultivation and sometimes escaping. (*Nasturtium armoracia* Fries; *Roripa armoracia* Hitchc.; *Radicula armoracia* Robinson; *A. armoracia* Britton.)

The grated roots furnish the well-known condiment.

8. NEOBECKIA Greene.

1. Neobeckia aquatica (Eaton) Britton. LAKE CRESS.

In a pool among the rocks below Great Falls; collected only by Ward, in 1879 and 1882. June–July. Eastern N. Amer. (*Nasturtium lacustre* A. Gray; *Roripa americana* Britton; *Radicula aquatica* Robinson.)

9. LEPIDIUM L.

Stem leaves with tapering bases. Plants glabrous or nearly so; pods shallowly notched at the top..................................**1. L. virginicum.**
Stem leaves with auricled clasping bases.
  Pods deeply notched, winged; branches of the inflorescence densely and finely hairy...**2. L. campestre.**
  Pods pointed, not winged; branches of the inflorescence glabrous or nearly so.
3. L. draba.

1. Lepidium virginicum L. PEPPERGRASS.

Fields and waste ground; abundant. May–July or later. Widely distributed in N. Amer. and naturalized elsewhere.

The young plants are often used as "greens."

Lepidium densiflorum Schrad. (*L. apetalum* of American authors) has been reported from our region, but the specimens so determined are merely an apetalous form of *L. virginicum.*

2. Lepidium campestre L.

Fields and waste ground; common. May–June. Native of Eur.; widely naturalized in N. Amer.

3. Lepidium draba L.

Collected a few times in waste ground about Washington. Apr.–May. Native of Eur.; locally adventive in N. Amer.

10. THLASPI L. PENNY CRESS.

1. Thlaspi arvense L.

Found only a few times about Washington and Alexandria; not collected recently. Native of Eur. and Asia; often adventive in N. Amer.

Thlaspi perfoliatum L., with clasping stem leaves, was collected in waste ground near Virginia Avenue, Apr. 1899 (*Steele*). Native of Eur.; rarely adventive in N. Amer.

11. ALLIARIA Adans.

1. Alliaria officinalis Andrzej. GARLIC MUSTARD.

Waste ground or low woods along the Potomac; occasional. Apr.–May. (*Sisymbrium alliaria* Scop.; *Alliaria alliaria* Britton.)

Readily distinguished from all our other members of the family by the garlic-like odor of the plant.

12. CHEIRINIA Link.

1. Cheirinia cheiranthoides (L.) Link. WORMSEED MUSTARD.

Low ground along the upper Potomac; rare. June–July. Widely distributed in N. Amer.; also in Eur. (*Erysimum cheiranthoides* L.)

13. ERYSIMUM L.

1. Erysimum officinale L. HEDGE MUSTARD.

Waste ground; common. May–June. Native of Eur.; widely naturalized in N. Amer. (*Sisymbrium officinale* Scop.)

The typical form with hairy pods is rare in North America, but it occurs in our region. The common form in North America (*Sisymbrium officinale leiocarpum* DC.) has glabrous pods.

14. NORTA Adans.

1. Norta altissima (L.) Britton. TUMBLE MUSTARD.

Occasional in old fields and waste ground. May–June. Native of Eur.; widely adventive in N. Amer., and in the West often a troublesome weed. (*Sisymbrium altissimum* L.)

Conringia orientalis (L.) Dum., hare's-ear mustard, with clasping, entire, pale green leaves, was collected in waste ground, Washington, May, 1899 (*Steele*). Native of Eur.; occasionally adventive in N. Amer.

15. HESPERIS L.

1. Hesperis matronalis L. DAME'S ROCKET.s

Occasional in woods and waste ground. May–June. Native of Eur.; sometime cultivated and escaping.

16. ARABIDOPSIS (DC.) Schur.

1. **Arabidopsis thaliana** (L.) Britton. MOUSE-EAR CRESS.

Fields; common. March–May. Native of Eur. and Asia; widely naturalized in N. Amer. (*Sisymbrium thalianum* Gay; *Stenophragma thaliana* Celak.)

17. CAMPE Dulac. WINTER CRESS.

Lobes of the leaves mostly 4–8 pairs; pods stout, sharply angled, on very stout short pedicels........**1. C. verna.**

Lobes of the leaves mostly 1–4 pairs; pods slender or stout, obtusely angled, on slender pedicels.

Pods erect; petals pale yellow........**2. C. stricta.**

Pods spreading or ascending; petals bright yellow........**3. C. barbarea.**

1. **Campe verna** (Michx.) Heller.

Woods, fields, and waste ground; abundant. Native of Eur.; extensively naturalized in eastern N. Amer. (*Barbarea praecox* R. Br.; *B. verna* Aschers.)

This and the other species are much used as "greens," and are commonly seen in the markets in spring.

2. **Campe stricta** (Andrzej.) W. F. Wight.

Fields; abundant. Apr.–May. Native of Eur. Asia, and northern N. Amer.; with us doubtless adventive. (*Barbarea vulgaris* of Ward's Flora; *B. stricta* Andrzej.)

3. **Campe barbarea** (L.) W. F. Wight.

Fields; apparently not common. Apr.–May. Native of Eur. and northern N. Amer.; naturalized in eastern N. Amer. (*Barbarea vulgaris* R. Br.; *B. barbarea* MacM.)

18. ARABIS L. ROCK CRESS.

Lower leaves pinnately divided; stem leaves mostly linear and entire, tapering at the base. Pods ascending........**1. A. lyrata.**

Lower leaves merely toothed; stem leaves all or mostly broader than linear, often toothed.

Stem leaves, at least the upper ones, long-tapering at the base, not auricled, more or less toothed; pods drooping. Plants hairy........**2. A. canadensis.**

Stem leaves never tapering at the base, more or less clasping and auricled; pods ascending or spreading.

Plants glabrous throughout; upper leaves mostly entire, long-tapering at the apex. Pods recurved-spreading........**3. A. laevigata.**

Plants hairy, at least below; upper leaves all or nearly all conspicuously toothed, never long-tapering at the apex.

Petals more than twice as long as the calyx; pods strongly ascending; seeds narrowly winged........**4. A. patens.**

Petals equaling or very slightly exceeding the sepals; pods spreading; seeds not winged........**5. A. dentata.**

Arabis hirsuta (L.) Scop. was reported from Sandy Landing by Ward, but the species is not represented by specimens from our region.

1. **Arabis lyrata** L.

On rocks along the upper Potomac; frequent; also collected once along the Eastern Branch, probably adventive there. March–June. Widely distributed in N. Amer.; also in eastern Asia.

2. **Arabis canadensis** L. SICKLE-POD.

Woods along the Potomac and Rock Creek; frequent. May–June. Eastern U. S.

3. **Arabis laevigata** (Muhl.) Poir.

Woods, often on rocks; frequent along the upper Potomac, occasional elsewhere. Apr.–May. Eastern N. Amer.

4. Arabis patens Sulliv.

Woods along the upper Potomac; occasional. Apr.–May. Minn. to Ala.

5. Arabis dentata Torr. & Gray.

Moist woods along the upper Potomac; occasional. Apr.–May. Northern states, south to Va.

19. CARDAMINE L. Bitter cress.

Leaves simple, toothed or entire; stem bulblike at the base; petals about 10 mm. long.

Sepals green; petals white; plants glabrous........................**1. C. bulbosa.**

Sepals purplish; petals usually purplish; plants more or less hairy, with very short hairs..**2. C. douglassii.**

Leaves pinnately divided; stems not bulblike at the base; petals less than 4 mm. long.

Leaflets hairy on the upper surface, those of the basal leaves rounded; stamens 4. **3. C. hirsuta.**

Leaflets glabrous, comparatively narrow; stamens usually 6.

Leaflets of the stem leaves distinct, not running together along the rachis; plants of dry soil..**4. C. parviflora.**

Leaflets of the stem leaves running together along the rachis, the rachis thus winged; plants of wet soil............................**5. C. pennsylvanica.**

1. Cardamine bulbosa (Schreb.) B.S.P.

Wet soil; frequent. Apr.–May. Eastern U. S. (*C. rhomboidea* DC.)

2. Cardamine douglassii (Torr.) Britton.

Wet soil along the upper Potomac; infrequent. Apr.–May. Northern states, south to Md.

Our specimens seem to be typical of the species except that the petals are mostly white. The species is not very clearly distinct from *C. bulbosa*.

3. Cardamine hirsuta L.

Moist or wet soil in the region of Rock Creek Park and Chevy Chase; frequent. Apr.–May. Pa. to Nebr. and N. C., probably adventive; Eur. and Asia.

4. Cardamine parviflora L.

Dry woods; occasional. Apr.–May. Eastern N. Amer.; also in Eur. and Asia. (*C. hirsuta sylvatica* of Ward's Flora.)

5. Cardamine pennsylvanica Muhl.

Wet soil, often along streams; common. Apr.–May. Eastern N. Amer. (*C. hirsuta* of Ward's Flora, chiefly.)

20. DENTARIA L. Pepper-root.

Plants glabrous; leaflets of the basal leaves mostly ovate or rhombic-ovate, much broader than those of the stem leaves; teeth of the leaflets short, usually rounded. **1. D. heterophylla.**

Plants more or less hairy, at least above; leaflets of all the leaves similar, narrowly oblong to linear, the teeth long and narrow, usually very acute...**2. D. laciniata.**

Dentaria diphylla L. has been reported from our region, but the species is not represented by specimens. It closely resembles *D. heterophylla*, but the rootstocks are continuous, not jointed as in the latter species.

1. Dentaria heterophylla Nutt.

Moist woods; frequent, but the plants usually scattered. March–Apr. N. J. to Tenn.

2. Dentaria laciniata Muhl.

Moist woods; frequent. Apr.–May. Eastern N. Amer.

The flowers are shown in plate 30A.

21. SINAPIS L.

Pods glabrous, the beak shorter than the body; upper leaves toothed, or slightly lobed at the base..1. **S. alba.**

Pods very hairy, the beak longer than the body; leaves all pinnately lobed or parted. 2. **S. arvensis.**

1. **Sinapis alba L.** WHITE MUSTARD.

Waste ground, Washington, May, 1899 (*Steele*). Native of Eur.; sometimes cultivated and escaping. (*Brassica alba* Boiss.)

2. **Sinapis arvensis L.** CHARLOCK.

Collected several times in waste ground about Washington. Native of Eur.; frequently adventive in N. Amer. (*Brassica sinapistrum* Boiss.; *B. arvensis* B.S.P.)

22. BRASSICA L.

Upper leaves with clasping auricled bases. Plants glabrous or nearly so. 1. **B. campestris.**

Upper leaves petioled or narrowed at the base.

Pods erect, 15–18 mm. long, on appressed pedicels......................2. **B. nigra.**

Pods ascending, 30–35 mm. long, on spreading or ascending pedicels..3. **B. juncea.**

1. **Brassica campestris L.** TURNIP.

Old fields and waste ground; frequent. Apr.–May. Native of Eur.; widely cultivated and escaping.

This species includes a number of cultivated forms, any of which may be found as escapes. *B. napus* L. is rape; *B. oleracea* L. is cabbage.

2. **Brassica nigra (L.) Koch.** BLACK MUSTARD.

Occasional in waste ground. June–July. Native of Eur. and Asia; widely adventive in N. Amer.

3. **Brassica juncea (L.) Coss.** INDIAN MUSTARD.

Occasional in fields or waste ground. May–July. Native of Asia; widely adventive in N. Amer.

23. RAPHANUS L.

1. **Raphanus sativus L.** RADISH.

Occasional in waste ground. Native of Asia; common in cultivation and sometimes escaping.

67. CAPPARIDACEAE. Caper Family.

1. CLEOME L.

1. **Cleome spinosa L.** SPIDER-FLOWER.

Occasional in waste ground about Washington and Alexandria. July–Oct. Native of tropical Amer.; common in cultivation and sometimes escaping.

68. SARRACENIACEAE. Pitcher-plant Family.

1. SARRACENIA L.

1. **Sarracenia purpurea L.** PITCHER-PLANT.

Found in a few localities near Bennings and Laurel; very rare. May–June. Eastern N. Amer.

69. DROSERACEAE. Sundew Family.

1. DROSERA L. SUNDEW.

Leaf blades orbicular, as broad as long...........................1. **D. rotundifolia.**

Leaf blades spatulate, longer than broad..........................2. **D. intermedia.**

1. **Drosera rotundifolia** L.
Bogs near Kenilworth, Suitland, Hyattsville, and Beltsville. July–Aug. Widely distributed in N. Amer.; also in Eur. and Asia.

2. **Drosera intermedia** Hayne.
Bogs near Forest Glen and Beltsville. July–Aug. Eastern N. Amer.; also in Eur. In both species the leaves are covered with long red gland-tipped hairs which entrap insects.

70. PODOSTEMACEAE.

1. PODOSTEMUM Michx.

1. **Podostemum ceratophyllum** Michx. RIFFLEWEED.
On rocks in streams; infrequent. Summer. Eastern U. S.

71. CRASSULACEAE. Orpine Family.

1. SEDUM L. STONECROP.

Flowers in one-sided racemes; petals white; leaves entire............1. **S. ternatum.**
Flowers not in one-sided racemes; petals pink or purple; leaves toothed.
  Petals purple, twice as long as the sepals........................2. **S. triphyllum.**
  Petals pink, 3–4 times as long as the sepals....................3. **S. telephioides.**

1. **Sedum ternatum** Michx. THREE-LEAVED STONECROP.
Rocky woods; common. May. Northern states, south to Ga.

2. **Sedum triphyllum** (Haw.) S. F. Gray. LIVE-FOR-EVER.
Occasional along roadsides. Native of Asia; common in gardens.

3. **Sedum telephioides** Michx. WILD LIVE-FOR-EVER.
On rocks along the Potomac. Aug. N. Y. to Ga.

72. PENTHORACEAE. Ditch stonecrop Family.

1. PENTHORUM L

1. **Penthorum sedoides** L. DITCH STONECROP.
Ditches and wet places; infrequent. July–Aug. Eastern U. S.

73. SAXIFRAGACEAE. Saxifrage Family.

Petals none. Calyx lobes usually 4 and stamens 8; low marsh plant. 1. **CHRYSOSPLENIUM.**
Petals 5.
  Stamens 5. Leaves mostly basal, long-petioled, orbicular........2. **HEUCHERA.**
  Stamens 10.
    Stem leaves 2, opposite....................................3. **MITELLA.**
    Stem leaves none, the foliage leaves all from base of plant.
      Flowers in racemes; ovary 1-celled..........................4. **TIARELLA.**
      Flowers in cymes; ovary 2-celled........................5. **SAXIFRAGA.**

1. CHRYSOSPLENIUM L.

1. **Chrysosplenium americanum** Schwein. WATER-CARPET.
Springy places; infrequent. Apr.–May. Northern states, south to Ga.

2. HEUCHERA L.

1. **Heuchera americana** L. ALUM-ROOT.
Rocky woods; frequent. May. N. Y. to N. C.

3. MITELLA L.

1. **Mitella diphylla** L. MITERWORT.
Rich woods; above the fall line; infrequent. May–June. Northern states, south to N. C.

4. TIARELLA L.

1. **Tiarella cordifolia** L. FALSE MITERWORT.
Rocky woods; rare; Fort Washington (*Miss Mary F. Miller.*) May. Eastern U. S.

5. SAXIFRAGA L. SAXIFRAGE.

1. **Saxifraga virginiensis** Michx.
Rocky woods; frequent. Apr. Northern states, south to Ga. (*Micranthes virginiensis* Small.)

The flowers are shown in plate 30.

74. HYDRANGEACEAE. Hydrangea Family.

1. HYDRANGEA L.

1. **Hydrangea arborescens** L. WILD HYDRANGEA.
Rocky woods; frequent. June. Eastern U. S.

75. ESCALLONIACEAE.

1. ITEA L.

1. **Itea virginica** L.
Swamps below the fall line; frequent. June. Southern states, north to N. J.

76. GROSSULARIACEAE. Gooseberry Family.

Plants spineless; flowers in racemes..................................1. **RIBES.**
Plants spiny; flowers 1–4 in an umbellate cluster................2. **GROSSULARIA.**

1. RIBES L.

1. **Ribes americanum** Mill. WILD BLACK CURRANT.
Rich woods; infrequent; Beaver Creek, Blagdens Mill, Brookland. Apr. Eastern U. S. (*R. floridum* L'Hér.)

The red currant of cultivation (*R. vulgare* Lam.; *R. rubrum* of Ward's Flora) is sometimes found in the vicinity of gardens.

2. GROSSULARIA Mill.

1. **Grossularia rotundifolia** (Michx.) Coville & Britton. WILD GOOSEBERRY.
Rich woods; infrequent; Ammendale, Soldier's Home Road, Bladensburg. Apr. Mass. to N. C. in the mountains. (*Ribes rotundifolium* Michx.)

A low shrub with spines in pairs at the base of the leaf stalks.

77. HAMAMELIDACEAE. Witch-hazel Family.

Flowers with a calyx and 4 petals, in small axillary clusters, appearing in late autumn; shrubs; leaves with low rounded teeth; branches not winged..1. **HAMAMELIS.**
Flowers naked, in stalked globular or conic clusters, appearing in spring; trees; leaves with long acute lobes; branches usually with thick corky wings. 2. **LIQUIDAMBAR.**

1. HAMAMELIS L.

1. **Hamamelis virginiana** L. WITCH-HAZEL.
Moist or rocky woods; frequent above the fall line. The flowers appear in autumn after the leaves have fallen; the fruits remain attached for some time. Eastern U. S.

2. LIQUIDAMBAR L.

1. Liquidambar styraciflua L. SWEET GUM.
Moist woods; frequent. May. Southern states, north to Conn.

78. PLATANACEAE. Sycamore Family.

1. PLATANUS L.

1. Platanus occidentalis L. SYCAMORE.
Rich or moist woods; frequent. May. Eastern U. S.

79. ROSACEAE. Rose Family.

Plants shrubby.

Leaves simple; fruit a follicle or pod with several seeds; plants not prickly.

Follicles inflated; leaves palmately nerved and lobed..........1. **OPULASTER.**

Follicles not inflated; leaves pinnately veined, not lobed..........2. **SPIRAEA.**

Leaves compound; fruit of achenes (several within a fleshy receptacle) or a cluster of drupelets; plants armed with prickles.

Leaves pinnately compound; fruit of several bony achenes or nutlets inclosed in a globular or pear-shaped, somewhat fleshy receptacle; flowers pink, sometimes fading to nearly white..................................3. **ROSA.**

Leaves palmately compound; fruit a globular or oblong cluster of drupelets; flowers white, sometimes becoming pinkish with age, rarely purplish red. 4. **RUBUS.**

Plants herbaceous.

Pistil containing more than 1 ovule; fruit a follicle.

Leaves 2-3-pinnate; flowers small, in a large spicate panicle.....5. **ARUNCUS.**

Leaves 3-foliolate; flowers few, long-peduncled..........6. **PORTERANTHUS.**

Pistil 1-ovuled; fruit an achene, the receptacle sometimes fleshy.

Receptacle enlarged in fruit, juicy or spongy. Plants with runners; leaves 3-foliolate.

Petals white; fruiting receptacle juicy........................7. **FRAGARIA.**

Petals yellow; fruiting receptacle spongy....................8. **DUCHESNEA.**

Receptacle not enlarged in fruit, dry.

Achenes numerous, upon a convex receptacle.

Styles elongating in fruit, jointed and bent near the middle, the upper part deciduous, the lower persistent as a hook...................9. **GEUM.**

Styles not elongating in fruit and not forming hooks...10. **POTENTILLA.**

Achenes few, inclosed in an urn-shaped calyx tube.

Petals present, yellow; flowers in long racemes. Margin of the top-shaped fruiting calyx with hooked prickles..................11. **AGRIMONIA.**

Petals absent; flowers clustered or spicate.

Flowers in small, nearly sessile clusters; plant a low annual..12. **APHANES.**

Flowers in long-peduncled dense heads or spikes; plants perennial.

Inflorescence cylindric, white; leaflets 2–5 cm. long. 13. **SANGUISORBA.**

Inflorescence globular, green; leaflets 8–15 mm. long..14. **POTERIUM.**

1. OPULASTER Medic.

1. Opulaster opulifolius (L.) Kuntze. NINE-BARK.
Rocky woods; frequent. May. Eastern U. S. (*Physocarpus opulifolius* Maxim.; *Neillia opulifolia* Benth. & Hook.)

2. SPIRAEA L.

Flowers about 1 cm. wide, on slender pedicels..................**1. S. prunifolia.**
Flowers small, in close clusters.
  Leaves thin, glabrous....................................**2. S. latifolia.**
  Leaves thick, woolly beneath............................**3. S. tomentosa.**

1. **Spiraea prunifolia** Sieb. & Zucc.
Cultivated and sometimes escaped. Apr. Originally from Japan.
Flowers often double.

2. **Spiraea latifolia** (Ait.) Borkh. MEADOWSWEET.
Rocky places; infrequent. July. Northern states, south to Va.

3. **Spiraea tomentosa** L. HARDHACK.
Low ground; rare; Sligo Creek (*Oldys*); southwest of Rockville (*Hitchcock*). July. Northern states, south to Ga.

3. ROSA L. ROSE.

Leaflets 3–5; styles coherent in a protruding column.................**1. R. setigera.**
Leaflets 5–many; styles distinct.
  Calyx lobes deeply incised, erect on the fruit, persistent..............**2. R. canina.**
  Calyx lobes deciduous, spreading
    Leaflets finely and evenly serrate..........................**3. R. palustris.**
    Leaflets coarsely serrate.
      Infrastipular spines slender, nearly straight.................**4. R. virginiana.**
      Infrastipular spines stout, with a broad base, curved.........**5. R. rubiginosa.**

1. **Rosa setigera** Michx. CLIMBING ROSE.
Thickets; infrequent. June. Eastern U. S.

2. **Rosa canina** L. DOG ROSE.
Thickets and roadsides; rare. May. Cultivated in gardens; originally from Eur.; escaped in the eastern U. S.

3. **Rosa palustris** Marsh. SWAMP ROSE.
Borders of swamps and streams; frequent. June. Eastern U. S. (*R. carolina* of authors, not L.)

4. **Rosa virginiana** Mill.
Borders of swamps; frequent. June. Northern states, south to Md. (*R. lucida* Ehrh.)

5. **Rosa rubiginosa** L. SWEETBRIER.
Rocky places and open ground; frequent. June. Introduced from Eur.

4. RUBUS L.

Leaves simple, 3–5-lobed; flowers 3–6 cm. wide, purple-red..........**1. R. odoratus.**
Leaves compound; flowers white.
  Fruit falling away whole from the dry receptacle; petals shorter than the calyx; plant conspicuously glaucous.............................**2. R. occidentalis.**
  Fruit not separating from the juicy receptacle; petals longer than the calyx; plants not conspicuously glaucous.
    Stems erect or ascending, not prostrate or trailing.
      Leaves wedge-shaped at base, pale-velvety beneath; pedicels armed with prickles..**3. R. cuneifolius.**
      Leaves not conspicuously wedge-shaped nor pale-velvety beneath; pedicels unarmed..**4. R. argutus.**
    Stems prostrate or trailing.
      Stems armed with numerous weak prickles, these not confined to the angles.
5. R. hispidus.
      Stems armed with stout prickles on the angles..............**6. R. procumbens.**

1. **Rubus odoratus** L. Flowering raspberry.
Thickets; rare; Great Falls (*Palmer*). June. Northern states, south to Ga.

2. **Rubus occidentalis** L. Black raspberry.
Thickets and fence rows; frequent. May. Eastern U. S.

3. **Rubus cuneifolius** Pursh. Sand blackberry.
Sandy soil; frequent below the fall line. June. Southern states, north to Conn.

4. **Rubus argutus** Link. Tall blackberry.
Thickets, fence rows, and old fields; common. May. Mass. to Va. (*R. frondosus* of Gray's Manual; *R. villosus* of Ward's Flora.)

5. **Rubus hispidus** L. Swamp blackberry.
Low woods and swales; frequent below the fall line. June. Eastern states, south to N. C.

6. **Rubus procumbens** Muhl. Dewberry.
Dry open ground; frequent. May. Eastern U. S. (*R. canadensis* of Ward's Flora.)

There are many unidentified specimens of the genus, including probably several unnamed species.

5. ARUNCUS Adans.

1. **Aruncus vulgaris** Raf. Goat's-beard.
Rich woods; frequent. June. Northern states, south to Ga. (*A. aruncus* Karst.; *Spiraea aruncus* L.)

6. PORTERANTHUS Britton.

1. **Porteranthus trifoliatus** (L.) Britton. False ipecac.
Rich woods; frequent. May–June. N. Y. to Ga. (*Gillenia trifoliata* Moench.)

7. FRAGARIA L.

1. **Fragaria virginiana** Duchesne. Wild strawberry.
Open ground; frequent. May. Eastern U. S.
The flowers are shown in plate 31A.

8. DUCHESNEA J. E. Smith.

1. **Duchesnea indica** (Andr.) Focke. False strawberry.
Waste grassland; infrequent. Southern states, north to Pa.; naturalized from India. (*Fragaria indica* Andr.)

The bright red fruit looks exactly like a strawberry, but is not edible.

9. GEUM L. Avens.

Head of fruit stalked in the bractless calyx. Petals yellow............1. **G. vernum.**
Head of fruit sessile in the calyx; bractlets present.
  Petals white.
    Receptacle of fruit glabrous..................................2. **G. virginianum.**
    Receptacle of fruit hairy.
      Basal leaves and lower stem leaves simple or ternate..........3. **G. canadense.**
      Basal leaves and lower stem leaves pinnate..................4. **G. meyerianum.**
  Petals yellow.
    Petals shorter than the sepals, pale yellow........................5. **G. hirsutum.**
    Petals longer than the sepals, golden yellow......................6. **G. strictum.**

1. **Geum vernum** (Raf.) Torr. & Gray.
Thickets; infrequent. May. Eastern U. S.

2. **Geum virginianum** L.
Open woods and thickets; infrequent. June–July. Eastern U. S.

3. **Geum canadense** Jacq.
Borders of woods; common. June–July. Eastern U. S. (*G. album* Gmel.)

4. **Geum meyerianum** Rydb.
Moist ground; infrequent. July–Aug. Northern states, south to Md.

5. **Geum hirsutum** Muhl.
Woods and banks; rare; Seven Locks (*Steele*). July. Conn. to Ga.

6. **Geum strictum** Ait.
Low meadows; frequent. June. Northern states, south to Md.

10. POTENTILLA L. FIVE-FINGER.

Leaves pinnately compound..6. **P. anserina.**
Leaves palmately compound.
Flowers solitary on long axillary peduncles. Plants with prostrate shoots or runners.
Earliest flower from the node above the first well-developed internode. 1. **P. pumila.**
Earliest flower from the node above the second or third well-developed internode. 2. **P. canadensis.**
Flowers in cymes.
Leaflets 3..3. **P. monspeliensis.**
Leaflets 5–7.
Leaflets green beneath..4. **P. recta.**
Leaflets silvery beneath..5. **P. argentea.**

1. **Potentilla pumila** Poir.
Dry ground and old fields; frequent. May. Me. to Md. (*P. canadensis* of Ward's Flora.)

2. **Potentilla canadensis** L. FIVE-FINGER.
Open ground; frequent. May. Eastern U. S. (*P. canadensis simplex* of Ward's Flora.)

3. **Potentilla monspeliensis** L.
Moist open ground; frequent. July. Nearly throughout N. Amer.; also in Eur. (*P. norvegica* L.)

4. **Potentilla recta** L.
Fields; rare. June. Northern states, south to Md.; adventive from Eur.

5. **Potentilla argentea** L.
Barren places; rare. June. Northern states, south to Md.

6. **Potentilla anserina** L. SILVER-WEED.
Moist open ground; rare. Northern states, south to Md. (*Argentina anserina* Rydb.)

11. AGRIMONIA L. AGRIMONY.

Axis of racemes villous. Fruit 6 mm. wide; root not thickened....1. **A. gryposepala.**
Axis of racemes appressed-pubescent and often glandular, but not villous.
Leaflets glabrous beneath or with a few scattered spreading hairs; fruiting calyx hemispheric..2. **A. rostellata.**
Leaflets pubescent beneath; fruiting calyx topshaped.
Leaflets narrowly lanceolate, the principal ones 9–13 or more; root not tuberous. 3. **A. parviflora.**
Leaflets oblong or elliptic, mostly 5–7; root tuberous-thickened..4. **A. pubescens.**

1. **Agrimonia gryposepala** Wallr.
Dry woods; infrequent. Aug. Northern states, south to Va. (*A. hirsuta* Bicknell.)

2. **Agrimonia rostellata** Wallr.
Rocky woods; frequent. Aug. Conn. to Ga. (*A. eupatoria* of Ward's Flora.)

3. **Agrimonia parviflora** Ait.
Sandy fields; frequent. July–Aug. Northern states, south to Ga.

4. **Agrimonia pubescens** Wallr.
Open woods; frequent. July. Northern states, south to Ga. (*A. mollis* Britton.)

12. APHANES L.

1. **Aphanes arvensis** L. LADY'S-MANTLE.
Old fields and waste places; rare. June. Introduced from Eur. (*Alchemilla arvensis* Scop.)

13. SANGUISORBA L.

1. **Sanguisorba canadensis** L. AMERICAN BURNET.
Bogs and swales; infrequent. Aug. Northern states, south to Ga. (*Poterium canadense* A. Gray.)

14. POTERIUM L.

1. **Poterium sanguisorba** L. SALAD BURNET.
Fields and waste places; infrequent. May. Northern states, south to Md. (*Sanguisorba minor* Scop.)

80. MALACEAE. Apple Family.

Cotoneaster pyracantha (L.) Spach, native of Europe and Asia, was reported by Steele as an escape from cultivation.

Plants usually armed with spines; mature carpels ("seeds") hard and bony. Flowers in corymbs.........5. **CRATAEGUS.**
Plants without spines; mature carpels ("seeds") papery or leathery.
  Flowers in racemes; cells of the mature fruit twice as many as the styles. 4. **AMELANCHIER.**
  Flowers in corymbs or cymes; cells of the mature fruit as many as the styles.
    Plants shrubs; cymes compound, branched.........3. **ARONIA.**
    Plants trees; cymes simple.
      Flesh of the fruit with grit cells; opening of the receptacle partly closed by a disklike cushion; flowers white.........1. **PYRUS.**
      Flesh of the fruit without grit cells; opening of the receptacle open; flowers usually pink or tinged with pink.........2. **MALUS.**

1. PYRUS L.

1. **Pyrus communis** L. PEAR.
Occasional in woods and waste ground. Apr. Native of Eur.; cultivated and often escaping.

2. MALUS Mill.

Leaves and outer surface of calyx lobes glabrous.........1. **M. coronaria.**
Leaves and outer surface of calyx lobes white-woolly.........2. **M. sylvestris.**

1. **Malus coronaria** (L.) Mill. AMERICAN CRAB APPLE.
Thickets along the Northwest Branch west of Hyattsville; rare. Apr.–May Eastern U. S. (*Pyrus coronaria* L.)

2. **Malus sylvestris** Mill. APPLE.
Occasional in woods and waste ground. Apr.–May. Native of Asia; cultivated and escaping. (*Pyrus malus* L; *M. malus* Britton.)

The cultivated crab apples are derived from the Siberian crab apple, *Malus baccata* (L.) Borck., or from hybrids between this and the common apple. The Soulard crab apple is a hybrid between *Malus sylvestris* and one of our native species.

3. **ARONIA** Medic. CHOKEBERRY.

Cymes and leaves nearly glabrous. Fruit black..................**3. A. melanocarpa.**

Cymes and lower surface of leaves woolly.

  Fruit bright red; calyx lobes very glandular......................**1. A. arbutifolia.**

  Fruit purple black; calyx lobes nearly glandless................**2. A. atropurpurea.**

1. Aronia arbutifolia (L.) Ell.

Swamps and wet woods; frequent. May; fr. Sept.–Oct. Eastern U. S. (*Pyrus arbutifolia* L. f.)

2. Aronia atropurpurea Britton.

Shaded swamps, eastward; infrequent. May; fr. Aug.–Sept. Eastern N. Amer., south to Va. (*Pyrus arbutifolia atropurpurea* Robinson; *P. arbutifolia melanocarpa* of Ward's Flora.)

3. Aronia melanocarpa (Michx.) Britton.

Region of Fourmile Run; perhaps elsewhere. May. Eastern N. Amer. (*Pyrus melanocarpa* Willd.)

4. **AMELANCHIER** Medic. SHADBUSH. SERVICEBERRY. JUNEBERRY.

Leaves short-pointed; hypanthium (the combined calyx tube, receptacle, and ovary) small, 2.5–3 mm. in diameter, bell-shaped, not constricted below on the young fruit; sepals broad, oblong-triangular, obtuse or abruptly acute or short-pointed, reflexed from the base at time of falling of petals; petals 10–14 mm. long; tree or shrub...**1. A. canadensis.**

Leaves rounded at the tip; hypanthium 3–5 mm. in diameter; sepals narrow, triangular or lanceolate, acute, erect or recurved from the middle at time of falling of petals; petals 7–9 mm. long; shrubs.

  Hypanthium saucer-shaped, constricted below on the very young fruit; sepals recurved from the middle at time of falling of petals; top of the ovary woolly, at least when young; leaves oval, the veins 7–11 (average 8 or 9) pairs; teeth of average leaves 20–28 (32) on each side; stems 0.3–1.2 meters high, growing in colonies from rhizome-like bases...............................**2. A. stolonifera.**

  Hypanthium bell-shaped, not constricted below; sepals mostly erect; top of the ovary glabrous, rarely slightly woolly; leaves oblong, the veins 10–15 (average 11–13) pairs; teeth finer (20) 25–40 (45) on each side; stem 1.2–8 meters high, forming alder-like clumps...............................**3. A. oblongifolia.**

1. Amelanchier canadensis (L.) Medic.

Dry open woodlands; frequent. Apr.; fr. June. Eastern U. S. (*A. canadensis botryapium* of Gray's Manual.)

2. Amelanchier stolonifera Wiegand.

Rocks at Great Falls; edge of Hyattsville Swamp. Apr. Eastern N. Amer. (*A. spicata* of Britt. & Brown, Illustr. Fl.)

3. Amelanchier oblongifolia (Torr. & Gray) Roemer.

Swamps; occasional eastward. Apr. Me. to S. C. (*A. canadensis oblongifolia* Torr. & Gray; *A. intermedia* of Britt. & Brown, Illustr. Fl.)

Wiegand has identified as *A. laevis* Wiegand specimens from Bladensburg and Fourmile Run collected by Steele, and adds that they show affinity with *A. canadensis.*

5. **CRATAEGUS** L. HAWTHORN. RED HAW.

Leaves conspicuously triangular-cordate, glabrous...............**1. C. phaenopyrum.**

Leaves not triangular-cordate, glabrous or pubescent.

  Petioles about 1 mm. long..................................**2. C. uniflora.**

Petioles 15 mm. long or longer.
  Leaves wedge-shaped, broadest at or above the middle.
    , Leaves broadest toward the apex; petioles without stalked glands. 3. **C. crus-galli.**
    Leaves broadest at the middle; petioles with stalked glands.
      Leaves, corymbs, and fruit pubescent....................4. **C. intricata.**
      Leaves, corymbs, and fruit glabrous........................5. **C. straminea.**
  Leaves broadest at the base.
    Leaves 1.5–6.5 cm. long and wide; calyx lobes usually entire..6. **C. pruinosa.**
    Leaves 2.5–10 cm. long and wide; calyx lobes usually toothed...7. **C. coccinea.**

1. **Crataegus phaenopyrum** (L. f.) Medic. WASHINGTON THORN.
Fields and roadsides; known from a few localities. May. Md. to Ga. and westward. (*C. cordata* Ait.)

2. **Crataegus uniflora** Muenchh.
Woods along the upper Potomac; occasional. May. Eastern U. S. (*C. parvifolia* Ait.; *C. tomentosa* of Gray's Manual.)

3. **Crataegus crus-galli** L. COCKSPUR.
Sandy soil; frequent. May. Eastern N. Amer.

4. **Crataegus intricata** Lange.
Congress Heights and Hunting Creek; rare. May. Eastern U. S. (*C. coccinea* of Gray's Manual, and of Ward's Flora, in part; probably *C. tomentosa* of Brereton's Prodromus.)

5. **Crataegus straminea** Beadle.
High Island (*Steele*). Eastern U. S. (*C. apposita* Sarg.)

6. **Crataegus pruinosa** (Wendl.) Koch.
Near Laurel (*J. B. S. Norton*). May. Eastern U. S.

7. **Crataegus coccinea** L.
High Island (*Sudworth*); without locality (*Vasey*). Eastern N. Amer. (*C. pedicellata* Sarg.)

Crataegus monogyna Jacq. was reported from near Alexandria by Ward (as *C. oxyacantha*). Native of Eur. and Asia; cultivated and sometimes escaping.

Crataegus canbyi Sarg., *C. cuneiformis* (Marsh.) Eggleston, and *C. boyntoni* Beadle may occur in our area and should be looked for.

81. AMYGDALACEAE. Almond Family.

Ovary and fruit pubescent; stone pitted........................1. **AMYGDALUS.**
Ovary and fruit glabrous; stone smooth or nearly so...................2. **PRUNUS.**

1. AMYGDALUS L.

1. **Amygdalus persica** L. PEACH.
Occasionally found growing spontaneously in waste land. Apr. Native of Asia. (*Prunus persica* Stokes.)

2. PRUNUS L.

Flowers in racemes, the axis longer than the pedicels.
  Leaves thick, oblong, crenate-serrulate, the teeth incurved.........1. **P. serotina.**
  Leaves thin, obovate, sharply serrate, the teeth somewhat spreading. 2. **P. virginiana.**
Flowers in umbels or in very short racemes.
  Flowers large, the petals 8–16 mm. long.
    Teeth of leaves acuminate, not glandular; fruit oblong-globose, about 2 cm. in diameter...3. **P. americana.**
    Teeth of leaves obtusish, some or all glandular; fruit depressed-globose, about 1 cm. in diameter.

Leaves glabrous; inner scales of flower bud appressed; fruit sour . . **4. P. cerasus.**
Leaves pubescent beneath, at least on the veins; inner scales of flower bud subherbaceous, spreading; fruit sweet . . . . **5. P. avium.**
Flowers small, the petals 4–6 mm. long.
Leaves orbicular-ovate . . . . **6. P. mahaleb.**
Leaves elliptic to oblong.
Leaves elliptic, serrulate to the base, not paler beneath . . . . **7. P. angustifolia.**
Leaves spatulate-oblong, not serrulate along the cuneate base, pale beneath. **8. P. cuneata.**

1. **Prunus serotina** Ehrh. WILD BLACK CHERRY.

Rich woods; frequent. May. Eastern U. S. (*Padus virginiana* of Britt. & Brown, Illustr. Fl.)

2. **Prunus virginiana** L. CHOKE CHERRY.

Thickets and river banks; rare. May. Northern states, south to Ga. (*Padus virginiana* Mill.)

3. **Prunus americana** Marsh. WILD PLUM.

Thickets and fence rows; frequent. Apr. Southern states, north to Conn.

4. **Prunus cerasus** L. SOUR CHERRY.

Occasionally escaped from cultivation. Apr. Native of the Old World.

5. **Prunus avium** L. SWEET CHERRY.

Occasionally escaped from cultivation, along fence rows. Apr. Native of the Old World.

6. **Prunus mahaleb** L. MAHALEB.

Roadsides and thickets; infrequent. May. Originally from Eur.

7. **Prunus angustifolia** Marsh. CHICKASAW PLUM.

Thickets; frequent. Apr. Southern states, north to Del. (*P. chicasa* Michx.)

8. **Prunus cuneata** Raf.

Thickets in sandy soil; infrequent. May. Northern states, south to N. C.

82. CAESALPINIACEAE. Senna Family.

Leaves simple, entire; flowers reddish purple; pods winged. Trees . . . . . **1. CERCIS.**
Leaves compound, of numerous leaflets; flowers yellow or green; pods not winged.
Plants trees, armed with spines; flowers small, inconspicuous, greenish. **2. GLEDITSIA.**
Plants herbaceous, unarmed; flowers mostly large, showy, bright yellow.
Plants perennial, glabrous or nearly so; leaflets large, mostly 3.5–5 cm. long; pods jointed . . . . **3. CASSIA.**
Plants annual; leaflets small, mostly less than 2 cm. long; pods not jointed. **4. CHAMAECRISTA.**

1. CERCIS L.

1. **Cercis canadensis** L. REDBUD.

Woods; common. Apr. Eastern U. S.

Known also as Judas tree.

2. GLEDITSIA L.

1. **Gleditsia triacanthos** L. HONEY LOCUST.

Woods; common. May. Eastern states, south to Ga.

Often planted as a shade tree; remarkable for the large branched thorns usually found along the trunk; pods broad and flat, often 30–45 cm. long.

3. CASSIA L. WILD SENNA.

Joints of the pod as long as broad or longer; gland on the petiole usually club-shaped; stipules very narrowly linear . . . . **1. C. marilandica.**
Joints of the pod broader than long; glands conic or cylindric; stipules linear-lanceolate . . . . **2. C. medsgeri.**

1. **Cassia marilandica** L.
Thickets, woods, or low ground; frequent. July–Aug. Eastern U. S.

2. **Cassia medsgeri** Shafer.
.Two specimens from our region seen, neither with definite locality. Eastern U. S.

4. CHAMAECRISTA Moench.

Flowers 5–8 mm. wide; pedicels shorter than the sepals, stout........1. **C. nictitans.**
Flowers 25–40 mm. wide; pedicels mostly longer than the sepals, very slender. 2. **C. fasciculata.**

1. **Chamaecrista nictitans** (L.) Moench. SENSITIVE PEA.
Dry woods and fields; common. July–Oct. Eastern U. S. (*Cassia nictitans* L.)
In both our species the leaves are "sensitive," folding together when touched.

2. **Chamaecrista fasciculata** (Michx.) Greene. PARTRIDGE PEA.
Dry soil; common. July–Oct. Eastern U. S. (*Cassia chamaecrista* of many American authors, probably not of Linnaeus.)

83. FABACEAE. Pea Family.

Leaves all or mostly with 4 or more leaflets.
Plants trees, armed with spines....................................10. **ROBINIA.**
Plants wholly herbaceous, not spiny.
Leaflets digitate, all attached at the end of the petiole. Perennial with large blue flowers..3. **LUPINUS.**
Leaflets pinnately arranged, part or all of them attached along the rachis.
Leaves evenly pinnate, without a leaflet at the end of the rachis, the rachis usually ending in a tendril; flowers blue or purple.
Style with a tuft of hairs at the top; leaflets small, rarely 8 mm. wide, or in one species large and toothed, thin and not very prominently veined. 15. **VICIA.**
Style hairy on the inner side; leaflets large, mostly over 1 cm. wide, thick, entire, prominently veined...............................16. **LATHYRUS.**
Leaves odd-pinnate, with a leaflet at the end of the rachis.
Leaflets 5 or 7 (sometimes 3 in the uppermost leaves); stems twining. Plants perennial, with tuber-bearing roots; flowers brownish purple; leaflets 10 mm. wide or larger...................................18. **GLYCINE.**
Leaflets more than 7 in all or most of the leaves, usually much more numerous; stems erect.
Stems with short, closely appressed hairs; pods not flattened; flowers greenish yellow.................................11. **ASTRAGALUS.**
Stems with long spreading hairs; pods flat; flowers yellowish and purple. 9. **CRACCA.**
Leaves with 1 or 3 leaflets.
Leaves all with 1 leaflet, or simple. Flowers yellow.
Plants perennial, tall, somewhat shrubby, nearly glabrous; pods flat.
Flowers 12 mm. long, nearly sessile..........................4. **GENISTA.**
Flowers 25 mm. long, the pedicels 6–10 mm. long.............5. **CYTISUS.**
Plants annual, low, herbaceous, very hairy; pods inflated....2. **CROTALARIA.**
Leaves, at least most of them, with 3 leaflets.
Leaflets finely toothed (teeth almost obsolete in the common red clover, *Trifolium pratense*). Flowers usually less than 1 cm. long; pods 1–few-seeded.
Flowers in long slender racemes, white or yellow. Plants sweet-scented; pods small, not curved or coiled..........................7. **MELILOTUS.**

Flowers in dense heads or umbels or in short, thick, very dense spikes.
  Pods curved or coiled; flowers yellow or bluish purple......6. **MEDICAGO.**
  Pods not curved or coiled; flowers variously colored......8. **TRIFOLIUM.**
Leaflets entire or sometimes lobed, never toothed.
  Plants with woody stems.
    Plants erect, the stems acutely angled; leaflets rarely over 1 cm. long. 5. **CYTISUS.**
    Plants climbing, the stems obtusely angled; leaflets mostly 10 cm. long or larger..24. **PUERARIA.**
  Plants herbaceous.
    Pods of 2 or more joints (the joints evident even in the ovary of the flower); stipules sometimes bearing long yellow bristles.
      Flowers yellow; stipules with long yellow bristles; leaflets small, usually less than 8 mm. wide........................12. **STYLOSANTHES.**
      Flowers purple or purplish; stipules never bristly; leaflets usually much more than 1 cm. wide............................13. **MEIBOMIA.**
    Pods not jointed; stipules never with yellow bristles.
      Flowers on axillary 1 or 2-flowered peduncles; corolla about 5 cm. long, pale blue. Pods flat............................17. **CLITORIA.**
      Flowers variously arranged, the peduncles when axillary bearing more than 2 flowers; corolla less than 2 cm. long, usually much smaller.
        Stems erect, never twining.
          Pods 1-seeded; flowers purple or yellowish white; stipules very small, brown.................................14. **LESPEDEZA.**
          Pods with more than one seed; flowers never purple; stipules often large and green.
            Leaflets densely and finely hairy beneath, the veins coarse and prominent beneath; petals only slightly longer than the calyx, yellow; pods flat........................21. **DOLICHOLUS.**
            Leaflets glabrous or nearly so, the veins slender, not prominent; petals much longer than the calyx; pods inflated. 1. **BAPTISIA.**
        Stems climbing, twining.
          Flowers in heads or umbels; leaflets sometimes lobed. Flowers pink or white..........................2. **STROPHOSTYLES.**
          Flowers in racemes; leaflets not lobed.
            Leaflets very obtuse or rounded at the apex. Flowers purple or purplish; calyx with a small bract at the base..20. **GALACTIA.**
            Leaflets very acute.
              Stems with numerous reflexed brown hairs. Flowers white to purple; pods finely hairy......................19. **FALCATA.**
              Stems never with reflexed hairs; flowers purple; pods glabrous. 22. **PHASEOLUS.**

1. BAPTISIA Vent. WILD INDIGO.

Flowers blue; stipules longer than the petioles, leaflike, persistent.....1. **B. australis.**
Flowers yellow; stipules minute, deciduous..........................2. **B. tinctoria.**

1. **Baptisia australis** (L.) R. Br.

Low ground along the upper Potomac, abundant in some localities. May–June. Southern states, north to Pa.

2. **Baptisia tinctoria** (L.) R. Br.

Dry woods; common. June–July. Eastern U. S.

2. CROTALARIA L.

1. **Crotalaria sagittalis** L. RATTLEBOX.
Dry open soil; frequent. July–Aug. Eastern U. S. to Mex.

3. LUPINUS L.

1. **Lupinus perennis** L. WILD LUPINE.
Dry or wet, sandy soil; frequent. Apr.–May. Eastern U. S.

4. GENISTA L.

1. **Genista tinctoria** L. DYEWEED.
Waste ground at Fourteenth and Decatur Streets (*Steele*). Native of Eur. and Asia; sparingly naturalized in N. Amer.

5. CYTISUS L.

1. **Cytisus scoparius** (L.) Link. BROOM.
Established in Rock Creek Park and a few other localities in the same region. Apr.–June. Native of Eur.; naturalized in many parts of N. Amer.

6. MEDICAGO L.

Flowers violet or blue; leaflets more than twice as long as broad.........1. **M. sativa.**
Flowers yellow; leaflets less than twice as long as broad, often as broad as long. 2. **M. lupulina.**

Medicago arabica (L.) Huds. (*M. maculata* Sibth.) has been reported from waste ground in Washington.

1. **Medicago sativa** L. ALFALFA.
Occasional in waste ground. June–July. Native of Asia; widely cultivated for fodder, and often escaping.

2. **Medicago lupulina** L. BLACK MEDIC.
Fields and waste ground; frequent. May–July. Native of Eur. and Asia; widely naturalized in N. Amer.

7. MELILOTUS Mill.

Flowers white; standard petal slightly longer than the wing petals........1. **M. alba.**
Flowers bright yellow; standard about as long as the wings...........2. **M. officinalis.**

1. **Melilotus alba** Desv. WHITE SWEET CLOVER.
Waste ground; abundant. May–Aug. Native of Eur. and Asia; widely naturalized in N. Amer.

2. **Melilotus officinalis** (L.) Lam. YELLOW SWEET CLOVER.
Waste ground; frequent. May–Aug. Native of Eur. and Asia; widely naturalized in N. Amer.

8. TRIFOLIUM L. CLOVER.

Flowers yellow.
  Terminal leaflet sessile, like the lateral ones; heads of flowers 12–20 mm. long; stipules linear or nearly so...1. **T. agrarium.**
  Terminal leaflet slender-stalked; heads of flowers all or nearly all less than 12 mm long; stipules ovate.
    Flowers 20–40 in each head; standard petal conspicuously furrowed. 2. **T. procumbens.**
    Flowers about 10 in each head; standard only slightly furrowed...3. **T. dubium.**
Flowers white, red, or purple.
  Heads of flowers much longer than broad, long-stalked. Calyx teeth long-hairy; plants very hairy.
    Corolla crimson, equaling or longer than the calyx lobes; leaflets as long as broad or nearly so..4. **T. incarnatum**

Corolla whitish, shorter than the calyx lobes; leaflets more than twice as long as broad..**5. T. arvense.**

Heads of flowers as broad as long or nearly so.

Flowers sessile in the head; heads all or mostly sessile..............**6. T. pratense.**

Flowers stalked; heads all long-stalked.

Heads of flowers about 3 cm. in diameter; plants hairy; leaflets much longer than broad..**7. T. reflexum.**

Heads of flowers 1.5–2.5 cm. in diameter; plants nearly glabrous; leaflets nearly or quite as broad as long.

Stems erect or ascending, not rooting......................**8. T. hybridum.**

Stems creeping, rooting at the joints........................**9. T. repens.**

1. Trifolium agrarium L. HOP CLOVER.

Dry fields and waste ground; common. June–Aug. Native of Eur.; widely naturalized in N. Amer.

2. Trifolium procumbens L.

Dry fields and waste ground; common. May–June. Native of Eur.; widely naturalized in N. Amer.

3. Trifolium dubium Sibth.

Dry fields and waste ground; occasional. May–June. Native of Eur.; widely naturalized in N. Amer.

4. Trifolium incarnatum L. CRIMSON CLOVER.

Roadsides and old fields; occasional, but not persisting like other adventive species. May–July. Native of Eur.; sometimes cultivated and escaping.

5. Trifolium arvense L. RABBIT-FOOT CLOVER.

Dry fields; common. May–July. Native of Eur. and Asia; widely naturalized in N. Amer.

6. Trifolium pratense L. RED CLOVER.

Fields and meadows; abundant. May–Aug. Native of Eur. and Asia; widely cultivated and naturalized in N. Amer.

White-flowered plants are sometimes found. Specimens of this species have been reported from our region as *T. medium* L.

7. Trifolium reflexum L. BUFFALO CLOVER.

Low ground along the upper Potomac; rare. May–June. Eastern U. S.

8. Trifolium hybridum L. ALSIKE CLOVER.

Meadows and waste ground; common. May–Sept. Native of Eur.; widely naturalized in N. Amer.

9. Trifolium repens L. WHITE CLOVER.

Fields, meadows, and waste ground; abundant. Flowering throughout the summer. Native of Eur.; widely naturalized in N. Amer.

Lotus corniculatus L, bird's-foot trefoil, was collected along the railroad near H Street bridge, Aug., 1915 (*J. B. S. Norton*). Native of Eur.; occasionally adventive in N. Amer.

Amorpha fruticosa L., false indigo, was found as an escape from cultivation in Potomac Park, May, 1898 (*Steele*). The species is native farther south and west.

9. CRACCA L.

1. Cracca virginiana L. GOAT'S-RUE.

Dry fields and woods; common. May–June. Eastern U. S. (*Tephrosia virginiana* Pers.)

The flowers are shown in plate 31.

10. ROBINIA L.

1. **Robinia pseudo-acacia** L. BLACK LOCUST.
Abundant; perhaps naturalized. May. Pa. to Iowa and Ga.
A tree is shown in plate 33.
Several other species of the genus are frequent in cultivation.

11. ASTRAGALUS L.

1. **Astragalus carolinianus** L. MILK VETCH.
Low ground along the upper Potomac. June–July. Northern states, south to Ga. (*A. canadensis* L.)

12. STYLOSANTHES Swartz. PENCIL FLOWER.

Leaflets oblong-linear to oblanceolate, the larger ones 3 cm. long or longer, usually very acute; bracts subtending the flowers entire; plants very bristly.
1. S. biflora.
Leaflets oval or elliptic, mostly less than 2 cm. long, usually rounded or obtuse at the apex; bracts 3-parted; plants only slightly bristly................**2. S. riparia.**

1. **Stylosanthes biflora** (L.) B.S.P.
Dry soil; common. July–Sept. Eastern U. S. (*S. elatior* Swartz.)

2. **Stylosanthes riparia** Kearney.
Dry soil; occasional. June–Aug. Pa. to Ala.

13. MEIBOMIA Heist. TICK TREFOIL.

Stipules large, green, ovate or triangular, persistent.
  Stems trailing.
    Flowers purple; leaflets orbicular or nearly so; joints of the pod 3–5.
4. M. michauxii.
    Flowers whitish; leaflets broadly ovate; joints of the pod 2 or 3..**5. M. ochroleuca.**
  Stems erect.
    Leaflets glabrous or nearly so, very acute......................**6. M. bracteosa.**
    Leaflets hairy, very obtuse.....................................**7. M. canescens.**
Stipules small, brown, narrowly linear or subulate, often deciduous.
  Pod borne on a stalk many times longer than the calyx, not lobed on the upper margin, very deeply lobed on the lower margin, the joints 1–4. Stems usually erect; plants nearly glabrous.
    Flowering stems naked, rising from the base of the sterile leafy stems.
1. M. nudiflora.
    Flowering stems leafy.
      Leaves scattered along the stems; leaflets obtuse...........**2. M. pauciflora.**
      Leaves crowded at the top of the stem below the panicle; leaflets taper-pointed.
3. M. grandiflora.
  Pod sessile, or borne on a short stalk only 2 or 3 times as long as the calyx, lobed on both margins but much more deeply so below than above.
    Leaflets small, most of them less than 2.5 cm. long, rounded at the apex; joints of the pod 2 or 3.
      Plants glabrous or nearly so; petioles about as long as the lateral leaflets.
14. M. marylandica.
      Plants copiously hairy; petioles usually much shorter than the lateral leaflets.
15. M. obtusa.
    Leaflets larger, most of them more than 3 cm. long, usually much larger; joints of the pod often more numerous.
      Stems and leaves glabrous or nearly so. Joints of the pod 4–6.
        Leaflets lanceolate or oblong, all or most of them less than 2 cm. wide, green beneath...**8. M. paniculata.**

Leaflets broadly ovate or oval, most of them well over 2 cm. wide, glaucous beneath..**9. M. laevigata.**

Stems and leaves conspicuously hairy.

Leaflets densely velvety beneath, the hairs spreading.....**10. M. viridiflora.**

Leaflets not velvety beneath, the hairs appressed.

Joints of the pod triangular, with a conspicuous angle on the lower side; pods conspicuously stalked..........................**11. M. dillenii.**

Joints of the pod oval, rounded on the lower side; pods sessile or nearly so.

Racemes of flowers dense, with numerous large bracts just before flowering; corolla 8–12 mm. long; joints of the pod usually 4–6.

12. M. canadensis.

Racemes very loosely flowered, the bracts very small; corolla about 5 mm. long; joints of the pod usually 2.....................**13. M. rigida.**

1. **Meibomia nudiflora** (L.) Kuntze.

Dry woods; frequent. July–Sept. Eastern N. Amer. (*Desmodium nudiflorum* DC.)

Plants with white flowers are found occasionally.

2. **Meibomia pauciflora** (Nutt.) Kuntze.

A single specimen seen, collected near Pierce's Mill, Sept., 1878, by Ward. Eastern U. S. (*Desmodium pauciflorum* DC.)

3. **Meibomia grandiflora** (Walt.) Kuntze.

Woods; occasional. June–July. Eastern N. Amer. (*Desmodium acuminatum* DC.; *D. grandiflorum* DC.)

4. **Meibomia michauxii** Vail.

Dry woods; occasional. Aug.–Sept. Eastern U. S. (*Desmodium rotundifolium* DC.; *D. rotundifolium glabratum* A. Gray.)

5. **Meibomia ochroleuca** (M. A. Curtis) Kuntze.

Mount Hamilton, Oct., 1882 (*Ward*). N. J. to Ga. and Mo. (*Desmodium ochroleucum* M. A. Curtis.)

6. **Meibomia bracteosa** (Michx.) Kuntze.

Woods along the upper Potomac; occasional. Aug.–Sept. Eastern U. S. (*Desmodium bracteosum* Michx.)

7. **Meibomia canescens** (L.) Kuntze.

Thickets along the Potomac and Rock Creek; occasional. July–Sept. Eastern U. S. (*Desmodium canescens* DC.)

8. **Meibomia paniculata** (L.) Kuntze.

Woods and thickets; frequent. Aug.–Sept. Eastern U. S. (*Desmodium paniculatum* DC.)

9. **Meibomia laevigata** (Nutt.) Kuntze.

Dry woods; occasional. Aug.–Sept. Eastern U. S. (*Desmodium laevigatum* DC.)

10. **Meibomia viridiflora** (L.) Kuntze.

Woods and thickets; occasional. Aug.–Sept. Eastern U. S. (*Desmodium viridiflorum* Beck.)

11. **Meibomia dillenii** (Darl.) Kuntze.

Woods and thickets; common. Aug.–Sept. Eastern U. S. (*Desmodium dillenii* Darl.)

12. **Meibomia canadensis** (L.) Kuntze.

Low ground along the Potomac below Washington. Aug.–Sept. Eastern N. Amer. (*Desmodium canadense* DC.)

13. **Meibomia rigida** (Ell.) Kuntze.

Dry soil; rare. Aug.–Sept. Eastern U. S. (*Desmodium rigidum* DC.)

14. **Meibomia marylandica** (L.) Kuntze.

Dry woods and thickets; frequent. Aug.–Sept. Eastern U. S. (*Desmodium marylandicum* Boott.)

15. **Meibomia obtusa** (Muhl.) Vail.

Dry soil; frequent. Aug.–Sept. Eastern U. S. (*Desmodium obtusum* DC.; *D. ciliare* DC.)

Specimens of this species have been reported erroneously from our region as *M. arenicola* Vail.

14. LESPEDEZA Michx. BUSH CLOVER.

Plants annual; stipules ovate or lanceolate; calyx lobes ovate or oval, very obtuse.
  Flowers pink or purple..**1. L. striata.**
Plants perennial; stipules narrowly linear, bristle-like, long-tapering; calyx lobes narrow, very acute.
  Flowers all alike, perfect, in dense spikes or heads; corolla about as long as the calyx, whitish or yellowish, sometimes with a purple spot on the standard; pod not longer than the calyx lobes.
    Peduncles longer than the leaves; leaflets oval to nearly orbicular, less than twice as long as broad, loosely hairy beneath; flowers spreading in the spikes.
2. L. hirta.
    Peduncles shorter than the leaves; leaflets oblong or elliptic, more than twice as long as broad, closely silky-hairy beneath; flowers erect or ascending in the spikes..**3. L. capitata.**
  Flowers of 2 kinds, some of them petaliferous, in racemes or panicles, the petals purple, much longer than the calyx, the others mostly without petals, fertile, in small sessile clusters or mixed with the others; pods much longer than the calyx lobes.
    Peduncles all or nearly all shorter than the leaves, or the flower clusters sessile.
      Leaflets densely woolly or velvety beneath, oval to oblong. Flower clusters all sessile or nearly so....................................**4. L. stuvei.**
      Leaflets glabrous beneath or with closely appressed hairs.
        Leaflets oval or oblong; flower clusters often stalked........**5. L. frutescens.**
        Leaflets linear to linear-oblong; flower clusters all sessile or nearly so.
6. L. virginica.
    Peduncles, at least most of them, longer than the leaves.
      Stems with spreading hairs.
        Stems prostrate or trailing; peduncles long and slender, nearly all of them longer than the leaves................................**7. L. procumbens.**
        Stems erect; peduncles short and stout, often shorter than the leaves.
8. L. nuttallii.
      Stems glabrous or with closely appressed hairs.
        Stems erect; stipules mostly 5–8 mm. long......................**9. L. violacea.**
        Stems prostrate or trailing; stipules 2–5 mm. long.............**10. L. repens.**

1. **Lespedeza striata** (Thunb.) Hook. & Arn. JAPAN CLOVER.

Dry woods and fields; often abundant. Aug.–Sept. Native of eastern Asia; extensively naturalized in eastern N. Amer.

2. **Lespedeza hirta** (L.) Hornem.

Dry fields and woods; frequent. Aug.–Oct. Eastern U. S.

Lespedeza hirta oblongifolia Britton has been collected in our region, and one collection has been reported incorrectly as *L. angustifolia* (Pursh) Ell. Its inflorescence resembles that of *L. hirta*, but the leaflets are narrower and the pubescence appressed The plant has not been found in fruit and it has been surmised that it is a hybrid between *L. hirta* and *L. angustifolia*. If this is not the case the form is well worthy of specific rank.

3. **Lespedeza capitata** Michx.

Dry woods and fields; common. Aug.–Sept. Eastern U. S.

4. **Lespedeza stuvei** Nutt.

Dry fields and woods; frequent. Aug.–Sept. Eastern U. S.

5. **Lespedeza frutescens** (L.) Ell.

Dry woods and fields; frequent. Aug.–Sept. Eastern U. S. (*L. stuvei* of Ward's Flora, in part.)

6. **Lespedeza virginica** (L.) Britton.

Dry woods and fields; common. Aug.–Oct. Eastern U. S. (*L. reticulata angustifolia* of Ward's Flora.)

Lespedeza sieboldii Miq., a Japanese species, with large flowers, was collected along a roadside near Riverdale, Sept., 1905 (*House*). Escaped from cultivation.

7. **Lespedeza procumbens** Michx.

Dry woods and fields; frequent. Aug.–Sept. Eastern U. S.

8. **Lespedeza nuttallii** Darl.

Dry woods; occasional. Aug.–Sept. Eastern U. S.

9. **Lespedeza violacea** (L.) Pers.

Dry woods and fields; frequent. Aug.–Sept. Eastern U. S.

10. **Lespedeza repens** (L.) Bartr.

Dry woods and fields; common. July–Sept. Eastern U. S.

15. **VICIA** L. Vetch.

Leaflets 1–3 pairs, most of them 2 cm. wide or larger. Flowers large, sessile or nearly so in the axils; leaflets and stipules toothed..................**1. V. narbonensis.**
Leaflets more than 3 pairs in all or most of the leaves, less than 1 cm. wide.
Flowers sessile or nearly so in the axils of the leaves............**2. V. angustifolia.**
Flowers in long-stalked racemes.
Flowers 1–6 in each raceme, 4 mm. long or smaller..............**3. V. tetrasperma.**
Flowers more than 6 in most of the racemes, usually much more numerous, 7 mm. long or larger.
Plants very hairy; flowers 1.5 cm. long or larger, violet; pods about 1 cm. wide. **4. V. villosa.**
Plants glabrous or nearly so; flowers 1 cm. long or shorter, bluish white; pods 5–7 mm. wide....................................**5. V. caroliniana.**

1. **Vicia narbonensis** L. French vetch.

Well established in fields near Chevy Chase Lake. May–June. Native of Eur.; cultivated and sometimes escaping.

Vicia faba L., the broad bean, with large entire leaflets, was collected in waste ground, Hyattsville, June, 1907 (*Mrs. E. S. Steele*). Native of Asia and Africa; much grown for food in Eur., and rarely in N. Amer.

2. **Vicia angustifolia** L.

Fields and waste ground; frequent. Apr.–June. Native of Eur.; widely naturalized in N. Amer.

Often reported from our region as *V. sativa* L., a species so far not found here.

3. **Vicia tetrasperma** (L.) Moench.

Fields and waste ground; occasional. May–July. Native of Eur. and Asia; naturalized in eastern N. Amer.

Vicia hirsuta (L.) Koch, with hairy 2-seeded pods, was collected near the Long Bridge, June, 1898 (*Steele*). Native of Eur. and Asia; occasionally naturalized in N. Amer.

4. **Vicia villosa** Roth. HAIRY VETCH.

Fields, roadsides, and waste ground; frequent, and thoroughly established. May–Sept. Native of Eur. and Asia; sometimes cultivated and escaping.

5. **Vicia caroliniana** Walt.

Woods and thickets; frequent. Apr.–May. Eastern N. Amer.

16. LATHYRUS L. WILD PEA.

Leaflets mostly 2 or 3 pairs; flowers 2–8 in the raceme..........1. **L. myrtifolius.**
Leaflets 4–6 pairs in most of the leaves; flowers usually 10–25 in the raceme.
2. **L. venosus.**

Lathyrus latifolius L., the everlasting pea, with only one pair of leaflets, was collected along a roadside near Soldiers' Home, June, 1897 (*Kearney*). Native of Eur.; often cultivated for ornament and sometimes escaping.

1. **Lathyrus myrtifolius** Muhl.

Marshes along the Eastern Branch. July. Northern states, south to N. C. (*L. palustris* of Ward's Flora.)

2. **Lathyrus venòsus** Muhl.

Low ground along the upper Potomac; frequent. May. Eastern N. Amer.

17. CLITORIA L.

1. **Clitoria mariana** L. BUTTERFLY PEA.

Dry or moist ground; frequent. June–Aug. Southern states, north to N. J.

18. GLYCINE L.

1. **Glycine apios** L. POTATO PEA.

Moist ground; occasional. July–Sept. Eastern N. Amer. (*Apios tuberosa* Moench; *A. apios* MacM.)

19. FALCATA Gmel. HOG PEANUT.

Leaflets thin, mostly 1.3–5 cm. long; calyx about 4 mm. long; bracts small.
1. **F. comosa.**
Leaflets firm, mostly 5–10 cm. long; calyx about 6 mm. long; bracts large.
2. **F. pitcheri.**

1. **Falcata comosa** (L.) Kuntze.

Low thickets; frequent. Aug.–Sept. Eastern N. Amer. (*Amphicarpa monoica* Ell.)

2. **Falcata pitcheri** (Torr. & Gray) Kuntze.

Low thickets; frequent. Aug.–Sept. Northern states, south to Va. (*Amphicarpa pitcheri* Torr. & Gray.)

These two species are separated by no definite character, and by none that would be considered important in related groups of the family. Probably both are forms of one polymorphous species.

20. GALACTIA P. Br. MILK PEA.

Stems glabrous or nearly so; leaflets glabrous beneath or with a few appressed hairs; pods only slightly hairy ....1. **G. regularis.**
Stems with short soft spreading hairs; leaflets soft-downy beneath; pods very hairy.
2. **G. volubilis.**

1. **Galactia regularis** (L.) B.S.P.

Near Berwyn; reported from Suitland and Chain Bridge; rare. July–Aug. Eastern U. S.

2. **Galactia volubilis** (L.) Britton.

Dry woods and fields; frequent. July–Sept. Eastern U. S. (*G. mollis* Nutt.)

21. DOLICHOLUS Medic.

1. **Dolicholus erectus** (Walt.) Vail.
Dry soil; rare. July–Aug. Southern states, north to Del. (*Rhynchosia tomentosa* of Ward's Flora; *R. erecta* DC.)

22. PHASEOLUS L.

1. **Phaseolus polystachyus** (L.) B.S.P. WILD BEAN.
Low thickets along the Potomac; rare. Aug.–Sept. Eastern U. S. (*P. perennis* Walt.)

The common cultivated bean, *Phaseolus vulgaris* L., is sometimes found on garbage dumps.

23. STROPHOSTYLES Ell. WILD BEAN.

Leaflets all entire; pods 3.5–5 cm. long, 4 mm. wide or narrower.....**1. S. umbellata.**
Leaflets, at least some of them, usually shallowly lobed; pods mostly 5–7 cm. long, 5–7 mm. wide..**2. S. helvola.**

1. **Strophostyles umbellata** (Muhl.) Britton.
Dry or moist soil; frequent. July–Aug. Eastern U. S.

2. **Strophostyles helvola** (L.) Britton.
Dry or moist soil; frequent. Aug.–Sept. Eastern N. Amer. (*Phaseolus helvolus* L.)

24. PUERARIA DC.

1. **Pueraria thunbergiana** (Sieb. & Zucc.) Benth. KUDZU VINE.
Becoming established in several localities. Native of China; often cultivated for ornament.

It has been planted in the Zoological Park and elsewhere, and spreads rapidly.

Vigna sinensis (L.) Endl., the cow pea, is found occasionally in waste ground. Native of Asia; widely cultivated and sometimes escaping, but not persisting in our climate. (*V. catjang* Walp.)

Dolichos lablab L., the hyacinth bean, is sometimes found in waste ground. Native of Asia; often cultivated for ornament and sometimes escaping, but not persisting with us.

84. GERANIACEAE. Geranium Family.

Leaves pinnate, with distinct leaflets; beaks of the fruit bodies spirally coiled at maturity..**1. ERODIUM.**
Leaves palmately lobed; beaks of the fruit bodies merely recurved at maturity. **2. GERANIUM.**

1. ERODIUM L.

1. **Erodium cicutarium** (L.) L'Hér. ALFILERIA.
Old fields and waste ground; occasional. Apr.–June. Native of Eur. and Asia; widely naturalized in N. Amer.

2. GERANIUM L. CRANE'S-BILL.

Plants perennial, with thick rootstocks; petals 12–17 mm. long.....**1. G. maculatum.**
Plants annual, with fibrous roots; petals 8 mm. long or shorter.
  Peduncles much longer than the leaves; body of the fruit smooth and glabrous.
    Petals bright purple; seeds pitted...........................**2. G. columbinum.**
  Peduncles mostly shorter than the leaves; body of the fruit hairy or wrinkled.
    Body of the fruit glabrous, wrinkled. Petals deep purple; seeds smooth. **3. G. molle.**
    Body of the fruit hairy, not wrinkled.
      Petals deep purple; seeds pitted..........................**4. G. dissectum.**

Petals pale purple to nearly white; seeds smooth or reticulate.
  Seeds smooth; flowers on 2-flowered peduncles, loosely arranged. **5. G. pusillum.**
  Seeds reticulate; flowers in dense clusters. .... **6. G. carolinianum.**

1. **Geranium maculatum L.**
Woods; common. Apr.–June. Eastern U. S.

2. **Geranium columbinum L.**
Fields; occasional. May–June. Native of Eur. and Asia; naturalized in the eastern U. S.

3. **Geranium molle L.**
Fields; College Park. Apr.–May. Native of Eur.; naturalized in eastern N. Amer.

4. **Geranium dissectum L.**
College Park, May, 1916 (*J. B. S. Norton*). Native of Eur.; occasionally adventive in N. Amer.

5. **Geranium pusillum L.**
Fields about Bladensburg. May–June. Native of Eur.; adventive in N. Amer.

6. **Geranium carolinianum L.**
Dry fields; common. Apr.–May. Widely distributed in N. Amer.

After flowering the plants become tinged with red, presenting a characteristic appearance.

85. OXALIDACEAE. Wood-sorrel Family.

Flowers purple; plants stemless, the leaves all basal.................. **1. IONOXALIS.**
Flowers yellow; plants with leafy stems......................... **2. XANTHOXALIS.**

1. IONOXALIS Small.

1. **Ionoxalis violacea** (L.) Small. VIOLET WOOD-SORREL.
Dry woods or fields; common. May–June. Widely distributed in the U. S. (*Oxalis violacea* L.)

Often known as sheep sorrel; the leaves have an agreeable acid flavor.

2. XANTHOXALIS Small. YELLOW WOOD-SORREL.

Petals about 15 mm. long, sometimes larger; stems mostly simple, erect, 30 cm. high or taller. Hairs of the stems and petioles spreading.............. **1. X. grandis.**
Petals 8–12 mm. long; stems often much branched, sometimes prostrate.
  Pedicels loosely hairy; plants tall, usually more than 30 cm. high; leaflets mostly 2–3 cm. wide... **2. X. cymosa.**
  Pedicels with appressed hairs; plants usually less than 30 cm. high; leaflets usually less than 1.5 cm. wide.
    Stems covered with fine, closely appressed hairs.................. **3. X. stricta.**
    Stems nearly glabrous, or with spreading hairs.
      Capsules densely and finely appressed-hairy; stems extensively creeping. **4. X. corniculata.**
      Capsules glabrous below or nearly throughout, finely hairy at the top; stems usually not creeping...................................... **5. X. filipes.**

1. **Xanthoxalis grandis** Small.
Moist woods; known definitely only from Plummers Island. May–June. Eastern U. S. (*Oxalis grandis* Small.)

2. **Xanthoxalis cymosa** Small.
Mostly in moist or shaded soil; common. May–Sept. Eastern U. S. (*Oxalis cymosa* Small; *O. corniculata stricta* of Ward's Flora, in part.)

3. **Xanthoxalis stricta** (L.) Small.

Fields or woods; common. May–Aug. Widely distributed in N. Amer. (*Oxalis stricta* L.; *O. corniculata stricta* Sav.)

4. **Xanthoxalis corniculata** (L.) Small.

Waste ground, Washington; rare. June–Sept. Native of tropical regions generally; adventive in the eastern U. S. (*Oxalis corniculata* L.; *O. repens* of Gray's Manual.)

5. **Xanthoxalis filipes** Small.

Woods; common. May–Aug. Md. to Ga. (*Oxalis filipes* Small.)

86. LINACEAE. Flax Family.

1. LINUM L. FLAX.

Linum usitatissimum L., cultivated flax, with blue flowers, is sometimes found in waste ground.

Leaves mostly opposite; stems striate-angled; plants of wet soil. Capsules depressed. **1. L. striatum.**
Leaves all, except the very lowest, alternate; stems not angled; plants mostly of dry soil.
  Capsules pointed at the top, as long as broad .... **2. L. floridanum.**
  Capsules depressed, flat or broadly rounded at the top, broader than long.
    Flowering branches erect, rigid; leaves narrowly lanceolate, dull or pale green; sepals in fruit usually with numerous glandular teeth .... **3. L. medium.**
    Flowering branches ascending or spreading, flexuous; leaves oblong, deep green; sepals in fruit usually without teeth .... **4. L. virginianum.**

1. **Linum striatum** Walt.

Swamps or low ground; frequent. July–Sept. Eastern U. S. (*Cathartolinum striatum* Small.)

2. **Linum floridanum** (Planch.) Trel.

Dry soil; occasional. July–Sept. Eastern U. S. (*Cathartolinum floridanum* Small; *L. virginianum* of Ward's Flora, in part.)

3. **Linum medium** (Planch.) Britton.

Dry soil; frequent. June–Aug. Eastern U. S. (*L. virginianum* of Ward's Flora, in part; *Cathartolinum medium* Small.)

4. **Linum virginianum** L.

Dry or moist woods; Rock Creek Park, Paint Branch, and along the Patuxent near Laurel. June–July. Eastern U. S. (*Cathartolinum virginianum* Reichenb.)

A specimen of *Kallstroemia parviflora* Norton, of the family Zygophyllaceae, was collected in the Department of Agriculture Grounds in 1895 (*G. H. Hicks*). Native of the southwestern U. S.

87. RUTACEAE. Rue Family.

Zanthoxylum americanum Mill., prickly ash, was reported by Ward from Pierce's Mill, but doubtless only as an escape from cultivation; native of the eastern U. S. A plant of *Ruta graveolens* L., rue, was found in Potomac Park in 1902 (*G. H. Shull*); native of Eur.

1. PTELEA L.

1. **Ptelea trifoliata** L. HOP TREE.

Woods along the Potomac; frequent. May–June. Eastern U. S.

Known also as wafer ash.

88. SIMAROUBACEAE. Quassia Family.

1. AILANTHUS Desf.

1. Ailanthus altissima (Mill.) Swingle. TREE OF HEAVEN.

Waste ground; frequent. June–July. Native of China; often cultivated and becoming naturalized. (*A. glandulosa* Desf.)

89. POLYGALACEAE. Milkwort Family.

1. POLYGALA L. MILKWORT.

Flowers orange-yellow, in a dense head. Plants perennial or biennial ... **1. P. lutea.**
Flowers not yellow.
  Plants perennial. Flowers in a spike or raceme.
    Flowers white; leaves lanceolate .... **2. P. senega.**
    Flowers rose-purple; leaves, at least the lower ones, obovate or narrowly wedge-obovate .... **3. P. polygama.**
  Plants annual.
    Leaves all or partly whorled.
      Flowers in long cylindric racemes 2–3 mm. thick.
        Leaves all whorled .... **4. P. verticillata.**
        Leaves except the lowest alternate .... **5. P. ambigua.**
      Flowers in dense oblong racemes 8–12 mm. thick .... **6. P. cruciata.**
    Leaves all alternate.
      Stems with nearly all leaves reduced to scales. Flowers rose-purple. **11. P. incarnata.**
      Stems leafy.
        Flowers rose-purple.
          Bracts of the racemes persistent after the fall of the flowers. Racemes 10–12 mm. thick .... **8. P. curtissii.**
          Bracts of the racemes deciduous.
            Wings 4.5–6 mm. long; pedicels much shorter than the pod. **7. P. viridescens.**
            Wings 3–3.5 mm. long; pedicels as long as the pod ..... **9. P. mariana.**
        Flowers greenish or nearly white.
          Racemes thick-oblong; bracts of the racemes soon deciduous. **7. P. viridescens.**
          Racemes conical; bracts persisting after the fall of the flowers. **10. P. nuttallii.**

1. Polygala lutea L. WILD BACHELOR'S-BUTTON.

Sandy swamps; vicinity of Laurel; near Suitland. June–Oct. Coastal Plain, Long Isl. to La.

2. Polygala senega L. SENECA SNAKEROOT.

Wooded hillsides; seemingly confined to the Piedmont Region. May–June. Northern states, south to N. C.

The leaves vary considerably, ranging from lanceolate to ovate. The larger-leaved form has been described as var. *latifolia* Torr. & Gray, but the forms so intergrade here that it is impossible to draw a line of separation. The rootstock is listed as an official drug in the U. S. Pharmacopœa.

3. Polygala polygama Walt.

Dry soil; Great Falls and Broadwater; apparently rare. June–July. Eastern N. Amer.

Bears numerous small cleistogamous flowers on underground branches.

4. Polygala verticillata L.

Dry soil, fields and meadows; frequent. July–Oct. Eastern N. Amer.

Our form has whitish flowers.

5. Polygala ambigua Nutt.

Dry fields and open ground; frequent. July–Oct. Northern states, south to Ga.

Flowers almost always purplish in our form.

6. Polygala cruciata L.

Sandy swamps and bogs; infrequent; Powder Mill bogs; Brightwood; reported also from Lakeland. July–Sept. Eastern U. S.

7. Polygala viridescens L.

Fields and open ground; frequent. June–Oct. Northern states, south to N. C. (*P. sanguinea* L.; *P. purpurea* Nutt.)

The greenish white and purplish forms were originally described as distinct species, the name *P. sanguinea* being applied to the latter.

8. Polygala curtissii A. Gray.

Open woods or sandy fields, seemingly where the water table is high; apparently confined to the Coastal Plain. July–Oct. Md. to Ga.

This species was described from an abnormal form collected near Alexandria by A. H. Curtiss. The normal form was given the varietal name *pycnostachys* by Gray and published by Knowlton. This is possibly the plant referred to by Brereton as *P. purpurea*.

9. Polygala mariana Mill.

Sandy fields, Coastal Plain; frequent. July–Oct. Southern states, north to N. J. (*P. fastigiata* Nutt.).

10. Polygala nuttallii Torr. & Gray.

Sandy soil on the Coastal Plain; infrequent. July–Sept. Eastern U. S. (*P. sanguinea* Nutt.)

11. Polygala incarnata L.

Sandy fields and pine woods; frequent. July–Sept. Eastern U. S.

Probably *P. setacea* of Brereton's Prodromus, as this is the only "aphyllos" plant of the genus in this vicinity.

Polygala paucifolia Willd., the flowering wintergreen or fringed polygala, is listed in Brereton's Prodromus, but has not been reported since. It is a dainty plant with 1–4 handsome pink or rose-purple flowers, 1.4–2 cm. long, in the axils of the upper leaves.

90. EUPHORBIACEAE. Spurge Family.

Juice not milky; flowers not in a calyx-like involucre. Annual plants; leaves alternate.
  Ovules 2 in each cell. Leaves entire, 2-ranked; flowers in small axillary clusters, apetalous; stamens 3..1. **PHYLLANTHUS.**
  Ovule 1 in each cell.
    Pubescence scaly or of branched hairs; petals and stamens 5; stamens incurved in bud; ovary 1-celled..2. **CROTONOPSIS.**
    Pubescence neither scaly nor of branched hairs; flowers apetalous; stamens erect in bud; ovary 3-celled..3. **ACALYPHA.**
Juice milky; inflorescence (a cyathium) resembling a small perfect flower, consisting of several staminate flowers, each composed of a single stamen, and a central pistillate flower, all inclosed in a calyx-like involucre with 1–5 glands between its 5 lobes.

Glands of the involucre without petal-like appendages; cyathia in umbels or cymes topping a well-developed stem.
  Plants annual, hairy; stipules glandlike; cyathia in cymose clusters, with 1 or rarely 4 glands..................................6. **POINSETTIA.**
  Plants perennials or winter annuals, glabrous; stipules none; cyathia in 3-many-rayed umbels, with 4 glands..............................7. **TITHYMALUS.**
Glands with petal-like appendages, or the cyathia borne in the forks of the stem near the ground.
  Plants deep-rooted perennials; stipules minute...........5. **TITHYMALOPSIS.**
  Plants annuals; stipules triangular or awl-shaped.............4. **CHAMAESYCE.**

1. PHYLLANTHUS L.

1. Phyllanthus carolinensis Walt.
Frequent in low sandy soil. June–Oct. Eastern U. S. to Centr. Amer.

2. CROTONOPSIS Michx.

1. Crotonopsis linearis Michx.
Reported from near Berwyn. Dry sandy soil, eastern and southern U. S.

Mercurialis annua L. was collected by Steele on the Department of Agriculture grounds in 1916, the station since destroyed. Adventive from Eur.

3. ACALYPHA L. THREE-SEEDED MERCURY.

The bracts are sometimes reduced or wanting in both our species; such forms and occasional intermediates are difficult to place. Variations with spreading rather than appressed pubescence occur here.

Leaves ovate, long-petioled; bracts deeply lobed, not prominently ciliate; branches ascending..1. **A. virginica.**
Leaves linear to lanceolate, short-petioled; bracts dentate to cleft, usually conspicuously ciliate; lower branches spreading, long and slender.........2. **A. gracilens.**

1. Acalypha virginica L.
Common in fields, gardens, and open places generally. June–Oct. Eastern N. Amer.

2. Acalypha gracilens A. Gray.
Common in open places, usually in drier situations than the preceding, but the two often together. June–Oct. Eastern and southern U. S.

Ricinus communis L., the castor-oil plant, is found occasionally in waste ground, escaping from cultivation and often seeding itself year to year, but not established.

4. CHAMAESYCE S. F. Gray.

Capsules pubescent; seeds less than 1 mm. long, violet gray to reddish. Plant prostrate; stem puberulent to hairy...................................1. **C. maculata.**
Capsules glabrous; seeds larger, black, often with a whitish coating.
  Stem hirsute, prostrate or spreading; middle leaves about twice as long as wide; seed faces smooth or slightly wrinkled........................2. **C. rafinesqui.**
  Stem with scattered hairs or glabrous, erect or ascending; middle leaves about 3 times as long as wide; seed faces with broken transverse ridges...3. **C. preslii.**

1. Chamaesyce maculata (L.) Small. MILK PURSLANE.
Common on dry walks and open ground. June–Nov. Eastern U. S. (*Euphorbia maculata* L.)

2. Chamaesyce rafinesqui (Greene) Small.
Reported from Great Falls and Marshall Hall (as *Euphorbia hirsuta* (Torr.) Wieg. Pa. and northward. (*Euphorbia rafinesqui* Greene.)

3. Chamaesyce preslii (Guss.) Arth.

Common in cultivated fields and open waste places. May–Oct. Eastern N. Amer. (*Euphorbia hypericifolia* of Ward's Flora; *E. preslii* Guss.)

The whole plant turns crimson in autumn.

Dichrophyllum marginatum (Pursh) Klotzsch & Garcke, snow-on-the-mountain, is sometimes found around gardens where it has been cultivated. Native of the western U. S. (*Euphorbia marginata* Pursh.)

5. TITHYMALOPSIS Klotzsch & Garcke.

The species of this genus, while generally distinct, often hybridize when they occur together, and it is probable that the great variety of occasional intermediates, even between such distinct species as *T. corollata* and *T. ipecacuanhae*, have arisen in this way. The flowers are often replaced by a cauliflower-like gall. All the species vary greatly in amount of pubescence, red color of stem and leaves, and form of leaf and appendages.

Main stem well developed, longer than the umbel; plants flowering in summer.
  Leaves bright green, not much paler on the lower side, sessile or nearly so. **5. T. corollata.**
  Leaves dark green above, paler on the lower side, generally short-petioled, spreading or drooping. Plant more pubescent, especially at the nodes..**4. T. paniculata.**
Main stem nearly always shorter than the umbel, often subterranean; plants flowering in spring or early summer.
  Appendages of the involucral glands none or about half the width of the gland, greenish. Plant entirely glabrous or very rarely with a few hairs at the nodes; main stem below ground, the first flowers appearing at the surface. **1. T. ipecacuanhae.**
  Appendages conspicuous, petal-like.
    Plants with a main stem 10–30 cm. long, the stems erect, often hairy at the nodes; leaves lanceolate to ovate or, if oblong, broadest below the middle, darker on the upper side; first flowers May to June..................**3. T. zinniiflora.**
    Plants branching from near the ground or, if with a longer main stem, then ascending, not conspicuously more hairy at the nodes; leaves of many forms, not much darker above; first flowers April to May............**2. T. marylandica.**

1. Tithymalopsis ipecacuanhae (L.) Small. WILD IPECAC.

Common in open places in the sandy soils east of Washington. Apr.–May. Eastern U. S. (*Euphorbia ipecacuanhae* L.)

Very variable in leaf form and color.

2. Tithymalopsis marylandica (Greene) Small.

Rare in sandy land at Sunnyside and Seat Pleasant, but more frequent north of our range toward Baltimore. May–July. (*Euphorbia arundelana* Bartlett; *E. marylandica* Greene.)

A great many forms intermediate between *T. ipecacuanhae* and *T. corollata* are included under this name, and it is possible that they all originated from crosses of those species, as both occur with *T. marylandica* in nearly every place where it has been found.

Tithymalopsis mercurialina (Michx.) Small has been reported from our region but probably erroneously. (*Euphorbia mercurialina* Michx.)

3. Tithymalopsis zinniiflora Small.

Rare in sandy land; College Park. June. Southeastern U. S.

4. Tithymalopsis paniculata (Ell.) Small.

Occasional, generally in sandy land; Plummers Island and Bladensburg. Southeastern U. S. (*Euphorbia paniculata* Ell.)

Specimens collected by Dewey at Glen Carlyn and by Knowlton at Laurel are intermediate between this and *T. corollata*.

5. **Tithymalopsis corollata** (L.) Klotzsch & Garcke. FLOWERING SPURGE.

Common in somewhat dry open places, roadsides, and fields. July–Oct. Eastern N. Amer. (*Euphorbia corollata* L.)

Variable in form of leaf, inflorescence, and appendages, and in amount of pubescence.

6. POINSETTIA Graham.

The poinsettia (*P. pulcherrima* Graham), with brilliant red upper leaves, is a well-known houseplant, especially popular at Christmas time.

1. **Poinsettia dentata** (Michx.) Small.

Open places; Seven Locks and near Plummers Island. July–Sept. Pa. to Tex. (*Euphorbia dentata* Michx.)

7. TITHYMALUS Adans.

The name spurge is applied generally to all the plants of this and even related genera, but more strictly belongs to *T. lathyrus* (L.) Hill, known also as caper spurge and mole plant, a stout glaucous plant with linear-lanceolate leaves, sometimes cultivated in gardens.

Leaves serrulate; glands transversely oval; seeds lenticular, smooth or faintly reticulate. Winter annual; umbel 3-rayed; capsule warty............**1. T. obtusatus.**
Leaves entire; glands crescent-shaped; seeds ovoid.
  Leaves obovate; umbel 3-rayed; seeds pitted; winter annual....**2. T. commutatus.**
  Leaves linear; umbel many-rayed; seeds smooth; perennial by buds on horizontal roots..**3. T. cyparissias.**

1. **Tithymalus obtusatus** (Pursh) Klotzsch & Garcke.

Frequent locally in moist open woods. March–June. Eastern and southern U. S. (*Euphorbia obtusata* Pursh; *E. dictyosperma* of Ward's Flora.)

2. **Tithymalus commutatus** (Engelm.) Klotzsch & Garcke.

Occasional in rich moist land, chiefly in woods, along the upper Potomac. March–June. Eastern and southern U. S. (*Euphorbia commutata* Engelm.)

3. **Tithymalus cyparissias** (L.) Hill. CYPRESS SPURGE.

One colony on the campus at College Park; also found along the railroad near Laurel. May. Cultivated from Eur. and frequently naturalized in the northeastern states. (*Euphorbia cyparissias* L.)

Seeds rarely in the United States but commonly at College Park.

91. CALLITRICHACEAE. Water starwort Family.

1. CALLITRICHE L. WATER STARWORT.

Plants forming low tufts on moist soil; leaves uniform in shape, 3-nerved, crowded; fruit pedunculate. Bracts none...............................**1. C. austini.**
Plants aquatic or sometimes growing on mud; leaves 1-nerved; fruit sessile.
  Fruit with rather fugacious bracts at the base; emersed and submersed leaves unlike.
    Fruit oval, flat on the face, longer than the styles.................**2. C. palustris.**
    Fruit obovate, plano-convex, shorter than the styles..........**3. C. heterophylla.**
  Fruit without bracts; all leaves submersed, linear................**4. C. autumnalis.**

1. **Callitriche austini** Engelm.

Occasional in damp shaded places. Fr. May–June. Eastern U. S.

2. **Callitriche palustris** L.

In shallow, usually running water. Fr. May–Aug. Cosmopolitan. (*C. verna* L.)

3. **Callitriche heterophylla** Pursh.

In shallow water; Woodside and Hunting Creek. Fr. May–Aug. Eastern U. S.

4. **Callitriche autumnalis** L.

In shallow water; Great Falls, Md., May, 1899 (*Steele*). Widely distributed in N. Amer., Eur., and Asia. (*C. bifida* Morong.)

92. LIMNANTHACEAE.

1. FLOERKEA Willd.

1. **Floerkea proserpinacoides** Willd. FALSE MERMAID.

Low wet soil; High Island, below Dead Run, and Plummers Island. Apr.–May. Eastern U. S.

93. ANACARDIACEAE. Sumac Family.

The smoke tree, *Cotinus coggyria* Scop., is cultivated for its attractive feathery fruiting panicles and highly colored autumn foliage.

Fruit whitish, glabrous or sparsely pubescent; stone striate; small trees, shrubs, or climbing vines, poisonous to the touch. Leaflets 3–13. 1. **TOXICODENDRON.**

Fruit reddish or purplish, densely pubescent; stone smooth; shrubs or small trees, not poisonous.

  Flowers in dense terminal panicles, appearing after the leaves; leaflets more than 3. 2. **RHUS.**

  Flowers in clustered spikes, appearing before the leaves; leaflets 3. 3. **SCHMALTZIA.**

1. TOXICODENDRON Mill.

Leaflets 7–13; tall shrubs, sometimes treelike.........................1. **T. vernix.**

Leaflets 3; low shrubs, suberect and scrambling, or climbing to considerable heights. 2. **T. radicans.**

1. **Toxicodendron vernix** (L.) Kuntze. POISON SUMAC.

Swamps; frequent. July. Eastern U. S. (*Rhus venenata* DC.; *R. vernix* L.)

This is the most poisonous species.

2. **Toxicodendron radicans** (L.) Kuntze. POISON IVY.

Woods or open fields; common. May–June. Eastern U. S. (*Rhus radicans* L.)

The typical form is a low erect pubescent plant. Very often, however, the plants are climbing and glabrate. The latter form is *T. pubescens* Mill. (*Rhus toxicodendron* L.; *T. toxicodendron* Britton.)

2. RHUS L. SUMAC.

Rachis of the leaf wing-margined....................................1. **R. copallina.**

Rachis of the leaf not winged.

  Foliage and twigs velvety-pubescent..............................2. **R. hirta.**

  Foliage and twigs glabrous.......................................3. **R. glabra.**

1. **Rhus copallina** L. DWARF SUMAC.

Woods or open fields, preferring dry situations; common. July. Eastern U. S.

A shrub, usually 1–2 meters high; leaflets glabrous on the upper surface. Sometimes known as black sumac.

2. **Rhus hirta** (L.) Sudw. STAGHORN SUMAC.

Dry rocky soil; frequent. June. Eastern N. Amer. (*R. typhina* L.)

This species has orange-colored wood and is ordinarily a shrub 2–5 meters high.

3. **Rhus glabra** L. WHITE SUMAC.

Dry soil; common. July. Eastern N. Amer.

A shrub 1–3 meters high. Known also as scarlet or smooth sumac. The leaves, like those of other species, are sometimes used for tanning.

3. SCHMALTZIA Desv.

1. **Schmaltzia crenata** (Mill.) Greene. FRAGRANT SUMAC.
Rocky woods; rare; Broadwater. Apr. Eastern N. Amer. (*Rhus aromatica* Ait.; *R. canadensis* Marsh.)
A shrub with red drupes.

94. AQUIFOLIACEAE. Holly Family.

1. ILEX L. HOLLY.

Leaves thick, persistent, spiny-toothed; medium-sized tree. Fruit globose, red, 7 mm. or more in diameter..**1. I. opaca.**
Leaves neither persistent nor spiny-toothed; shrubs.
  Staminate flowers solitary or in pairs. Peduncles 1–2 cm. long; fertile flowers solitary, short-stalked; fruit orange-red, sometimes yellow; nutlets smooth; leaves oval or oblong, about 5 cm. long, sparsely serrate, villous beneath on the veins..**2. I. laevigata.**
  Staminate flowers clustered or in cymes.
    Fertile flowers nearly sessile; fruit red (rarely yellow); nutlets smooth; leaves oval or obovate, acute or acuminate, sharply serrulate, downy beneath on the veins..**3. I. verticillata.**
    Fertile flowers stalked, the stalk about 5 mm. long; fruit red; nutlets ribbed; leaves obovate or spatulate-oblong, crenate-serrate, commonly obtuse. **4. I. decidua.**

1. **Ilex opaca** Ait. AMERICAN HOLLY.
Low woods. May–June; fr. Aug.–Sept. Eastern U. S.

2. **Ilex laevigata** (Pursh) A. Gray. SMOOTH WINTERBERRY.
Low woods. May–June; fr. Aug.–Sept. Northeastern U. S., south to Ga.

3. **Ilex verticillata** (L.) A. Gray. BLACK ALDER. WINTERBERRY.
Swamps and low woods. June; fr. Aug. Eastern U. S.

4. **Ilex decidua** Walt. DECIDUOUS HOLLY.
Low woods. May–June; fr. Aug.–Sept. Southeastern U. S., north to Md.

95. CELASTRACEAE. Bittersweet Family.

Leaves opposite; erect shrubs; flowers in axillary cymes............**1. EUONYMUS.**
Leaves alternate; climbing shrub; flowers in terminal compound racemes. **2. CELASTRUS.**

1. EUONYMUS L.

Leaves ovate-lanceolate, 8 cm. long or less; flowers greenish pink or yellow; capsule warty..**1. E. americanus.**
Leaves ovate-oblong, 10 cm. long or more; flowers purple; capsule smooth. **2. E. atropurpureus.**

1. **Euonymus americanus** L. STRAWBERRY BUSH.
Low woods; frequent. May. Eastern U. S. (*E. americanus obovatus* of Ward's Flora.)

2. **Euonymus atropurpureus** Jacq. WAHOO.
Low woods and river basins; along the Potomac above Georgetown. May–June. Eastern U. S.

2. CELASTRUS L.

1. **Celastrus scandens** L. BITTERSWEET.
Low woods and river basins; infrequent. May. Eastern N. Amer.

96. STAPHYLEACEAE. Bladdernut Family.

1. STAPHYLEA L.

1. **Staphylea trifolia L.** BLADDERNUT.
Moist woods. Apr.–May. Eastern U. S.

Several species of *Aesculus*, of the Aesculaceae, are cultivated in parks and along streets. They are trees with palmately compound leaves of 5–9 leaflets, conspicuous panicles of white, yellow, or pink flowers, and large smooth seeds. The most common is *A. hippocastanum* L., the horse chestnut.

97. ACERACEAE. Maple Family.

Leaves simple; plants with perfect flowers; twigs reddish................1. **ACER.**
Leaves pinnately compound; plants dioecious; twigs bright green......2. **RULAC.**

1. ACER L. MAPLE.

Several exotic species of maples are cultivated as shade trees, the more common being: *A. pseudo-platanus* L., the sycamore maple, a large tree with drooping racemes, woolly ovaries, and deeply 3–5-lobed leaves; *A. platanoides* L., the Norway maple, a large tree with flowers in corymbs, and shallowly 5–7-lobed leaves; *A. tartaricum* L., a shrub with roundish, scarcely lobed leaves; *A. campestre* L., a small tree with small 3–5-lobed leaves, 3.5–7.5 cm. long.

Lobes of the leaves meeting in an evenly rounded curve; flowers appearing with the leaves, green, hanging from long stalks, these often 5 cm. long; fruit maturing in summer; body of each fruit distinctly less than twice the length of its scar. 1. **A. saccharum.**
Lobes of the leaves meeting at an angle; flowers appearing before the leaves, red or yellow, in close clusters on the twigs, the stalks of the pistillate flowers, however, elongating with the development of the fruit; fruit maturing in May or late April; body of each fruit twice the length of its scar or more.
  Leaf sinuses (the space between the lobes) intruded less than half the length of the lateral lobes, approximately right-angled, the sides nearly straight; minute petals present in the flower, in addition to the calyx lobes; fruit without hairiness from the first, 1.5–2.5 cm. long when ripe....................2. **A. rubrum.**
  Leaf sinuses intruded more than half the length of the lateral lobes, the sides much curved outward before meeting at the angle; flower with calyx lobes only, no petals; fruit woolly when young, retaining a scattered pubescence until maturity, 5–7 cm. long when ripe................................3. **A. saccharinum.**

1. **Acer saccharum Marsh.** SUGAR MAPLE.
Rich woods along the Potomac; infrequent. May. Northern states and southward in the mountains. (*A. saccharinum* Wang.)

2. **Acer rubrum L.** RED MAPLE.
Swamps and moist woods; common. Feb.–Apr. Eastern U. S.
Also called swamp maple.

3. **Acer saccharinum L.** SILVER MAPLE.
River banks; frequent. Jan.–March. Eastern U. S. (*A. dasycarpum* Ehrh.)
One of the earliest trees to flower in the spring.

2. RULAC Adans.

1. **Rulac negundo (L.) Hitchc.** BOXELDER.
Low moist woods; common. Apr. Eastern U. S. (*Acer negundo* L.; *Negundo aceroides* Moench.)

Cardiospermum halicacabum L., balloon vine, of the family Sapindaceae, has been collected about Eckington. A native of the tropics, sometimes cultivated for ornament northward, and escaping but not persisting. It is a slender annual vine, distinguished by its bladdery balloon-like fruits.

98. IMPATIENTACEAE. Touch-me-not Family.

1. IMPATIENS L.

Flowers pale yellow, slightly spotted with brownish red; stems pale green. **1. I. pallida.**
Flowers orange, thickly spotted with reddish brown; stems usually reddish. **2. I. biflora.**

1. Impatiens pallida Nutt. PALE TOUCH-ME-NOT.

Low shaded ground along the upper Potomac; occasional. June–Sept. Eastern N. Amer.

2. Impatiens biflora Walt. SPOTTED TOUCH-ME-NOT.

Low shaded ground; common. June–Sept. Eastern N. Amer. (*I. fulva* Nutt.)

Plants with pale yellow or pinkish flowers occur occasionally.

99. RHAMNACEAE. Buckthorn Family.

1. CEANOTHUS L.

Leaves 1–2 cm. wide, narrowed at the base, elliptic, glabrous; peduncles few, scarcely if at all longer than the inflorescence.................................**1. C. ovatus.**
Leaves 2–6 cm. wide, usually rounded at the base, ovate, hairy beneath; peduncles numerous, usually much longer than the inflorescence........**2. C. americanus.**

1. Ceanothus ovatus Desf.

Flats about Little Falls. May. Eastern U. S.

Plants from our region were described by Rafinesque as *C. herbaceus*.[1]

2. Ceanothus americanus L. NEW JERSEY TEA.

Open woods. June. Eastern U. S.

The leaves were used as a substitute for tea during the Revolutionary War, hence the common name.

100. VITACEAE. Grape Family.

Leaves digitately compound...............................**1. PARTHENOCISSUS.**
Leaves simple or pinnately compound.
  Flowers in small short cymes or panicles; petals spreading at their tips; berry not edible...**2. AMPELOPSIS.**
  Flowers in elongate racemes, cymes, or panicles; petals falling away united by their apices; berry edible ....**3. VITIS.**

1. PARTHENOCISSUS Planch.

1. Parthenocissus quinquefolia (L.) Planch. VIRGINIA CREEPER.

Ravines and deciduous forests. May–June; fr. Aug.–Sept. Eastern N. Amer. to Mex. (*Ampelopsis quinquefolia* Michx.; *Psedera quinquefolia* Greene.)

Parthenocissus tricuspidata Planch., the Boston ivy, is cultivated, covering walls as does the Virginia creeper.

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[1] Med. Repos. N. Y. **11**: 360. 1808.

2. AMPELOPSIS Michx.

Leaves 2–3-pinnate, the leaflets ovate, toothed, 1 cm. long or more; fruit black. **1. A. arborea.**

Leaves of two forms (dimorphic), the larger entire and 3-lobed, the smaller 2–5 cm. long, deeply 3–5-lobed; fruit bright blue or whitish........**2. A. heterophylla.**

1. **Ampelopsis arborea** (L.) Rusby. PEPPER VINE.
Moist woods; Terra Cotta. July; fr. Sept. Southeastern U. S., W. Ind., and Mex.

2. **Ampelopsis heterophylla** (Thunb.) Sieb. & Zucc.
Escaped in places. Native of eastern Asia; common in cultivation.

3. VITIS L. GRAPE.

Leaves floccose-woolly or tomentose beneath.
  Pubescence brown-tomentose, persistent; tendrils commonly opposite each leaf; leaves shallowly or not at all lobed, the margin dentate, the teeth short; fruit purple or amber-colored, about 15 mm. in diameter...........**1. V. labrusca.**
  Pubescence brownish, at length white, persistent only on the veins beneath; tendrils not opposite all the leaves; leaves not lobed, or deeply 3 or 5-lobed, the margin more or less coarsely dentate; fruit black, about 10 mm. in diameter. **2. V. aestivalis.**
Leaves glabrous or nearly so.
  Leaves more or less incisely toothed or lobed, the lobes acuminate; fruit 10 mm. in diameter or more, bluish black, sweet. Flowers and fruit in loose clusters. **3. V. vulpina.**
  Leaves coarsely toothed (sometimes lobed), the teeth short; fruit about 6 mm. in diameter.
    Leaves commonly longer than broad (measured from sinus to apex), 7 cm. wide or more; fruit in loose clusters, black, sour...............**4. V. cordifolia.**
    Leaves broader than long, smaller; fruit in compact clusters, black, with a bloom, sweet..**5. V. rupestris.**

1. **Vitis labrusca** L. FOX GRAPE.
Thickets and low woods. May–June; fr. Aug. Eastern U. S.

2. **Vitis aestivalis** Michx. SUMMER GRAPE.
Thickets and along fences. May–June; fr. Aug.–Sept. Eastern N. Amer.

3. **Vitis vulpina** L. FROST GRAPE.
Thickets. May–June; fr. July–Aug. Eastern N. Armer. (*V. riparia* Michx.)

4. **Vitis cordifolia** Michx. CHICKEN GRAPE.
Woods and along fences. May–June; fr. Oct. Eastern U. S.

5. **Vitis rupestris** Scheele. SAND GRAPE.
Ravines and along river banks. June; fr. Aug. Eastern U. S., from Pa. southward.

101. TILIACEAE. Linden Family.

1. TILIA L.

1. **Tilia americana** L. BASSWOOD.
Rich woods, usually near water; frequent. May. Eastern N. Amer.

Several European species, usually known as lindens, are cultivated as shade trees along our streets.

102. MALVACEAE. Mallow Family.

Althaea cannabina L., a native of Europe, was reported by Ward as growing in waste ground in east Washington, but has not been seen in many years. It resembles the common mallow, *Malva rotundifolia*, from which it is easily distinguished by its yellow flowers with purple center, and 6–9-bracted involucel.

Stamen column anther-bearing below the summit; fruit a 5-celled capsule.
4. HIBISCUS.
Stamen column anther-bearing at the summit only; fruit composed of 5–many carpels arranged in a circle and separating at maturity.
  Carpels of the fruit dehiscent, 2–several-seeded; leaves entire, velvety-hairy.
3. ABUTILON.
  Carpels indehiscent, 1-seeded; leaves serrate or dentate, glabrous or pubescent, but not velvety.
    Bractlets none at the base of the calyx; corolla yellow or white........**2. SIDA.**
    Bractlets 3 at the base of the calyx; corolla white, blue, or purplish.
1. MALVA.

1. MALVA L.

Plants erect; petals 2–4 times as long as the calyx, purple...........**1. M. sylvestris.**
Plants prostrate; petals about twice as long as the calyx, lavender or bluish.
2. M. rotundifolia.

1. Malva sylvestris L. HIGH MALLOW.

Waste places and along roadsides; Georgetown and the upper Potomac. May–July. Adventive from Eur.

2. Malva rotundifolia L. CHEESES.

Waste ground; frequent. May–Aug. Naturalized from Eur. and western Asia; widely distributed as a weed in temperate regions.

Malva crispa L., curled mallow, has been collected at Tennallytown; adventive from Eur. *M. moschata* L., musk mallow, also native of Eur., has been found as a waif in waste ground.

2. SIDA L.

Leaves linear or lanceolate, not lobed; flowers yellow, solitary in the axils, or in short-stalked axillary clusters of 2 or 3...............................**1. S. spinosa.**
Leaves palmately lobed; flowers white, in long-stalked axillary clusters.
2. S. hermaphrodita.

1. Sida spinosa L. FALSE MALLOW.

Waste places and fields. July–Sept. Eastern U. S. to tropical Amer.

2. Sida hermaphrodita (L.) Rusby. VIRGINIA MALLOW.

Along the Potomac, in rocky places, Plummers Island to Long Bridge. July–Sept. Eastern U. S. (*S. napaea* Cav.)

3. ABUTILON Mill.

1. Abutilon theophrasti Medic. VELVET-LEAF.

Waste places and fields; common. July–Aug. Naturalized from southern Asia. (*A. abutilon* Rusby; *A. avicennae* Gaertn.)

4. HIBISCUS L.

Hibiscus esculentus L., okra, has been found as a waif in waste ground; also *H. trionum* L., flower-of-an-hour, an annual with a bladdery-inflated calyx.

Plants shrubby...**1. H. syriacus.**
Plants herbaceous.
  Leaves glabrous on both sides, lobed at base or halberd-shaped; flowers pink.
2. H. militaris.
  Leaves white-pubescent beneath, lanceolate or ovate; flowers cream-colored, with crimson eye...**3. H. palustris.**

1. Hibiscus syriacus L. SHRUBBY ALTHAEA. ROSE OF SHARON.

An ornamental shrub, native of Asia, cultivated in gardens; often escaping to vacant lots and waste ground. July–Sept.

Flowers white, rose, or lilac, with a deep rose-colored eye.

2. Hibiscus militaris Cav. ROSE MALLOW.
Along the Potomac. July–Aug. Eastern U. S.

3. Hibiscus palustris L. SWAMP MALLOW.
Tidal marshes along the Potomac and Eastern Branch. July–Aug. Southeastern U. S.
This species has been confused with the pink-flowered *H. moscheutos* L., found north of our region.

Gossypium hirsutum L., upland cotton, is occasionally found in freight yards and along railroad tracks. As cotton is easily killed by freezing temperatures, the plants do not survive the winter.

103. HYPERICACEAE. St. John's-wort Family.

Sepals 4, in unequal pairs; petals 4..**1. ASCYRUM.**
Sepals and petals 5.
  Petals yellow, convolute in bud.
    Leaves normal, not reduced to scales...........................**2. HYPERICUM.**
    Leaves reduced to minute appressed scales......................**3. SAROTHRA.**
  Petals pink or greenish purple, imbricate in bud ....**4. TRIADENUM.**

1. ASCYRUM L.

Plants erect, with few erect branches, 30–60 cm. high; leaves clasping, oval or broadly oblong, thick; styles 3 or 4; pedicels without bracts near the flower..**1. A. stans.**
Plants diffusely branched, 12–25 cm. high; leaves sessile, oblong or obovate, narrow, thin; styles 2; pedicels 2-bracted near the flower..............**2. A. hypericoides.**

1. Ascyrum stans Michx. ST. PETER'S-WORT.
Dry sandy soil; frequent northeast of Washington. Aug. Eastern U. S.
Flowers showy, 1–2 cm. broad.

2. Ascyrum hypericoides L. ST. ANDREW'S CROSS.
Sandy or rocky barrens; common. July–Sept. Eastern U. S. (*A. crux-andreae* L.)
Flowers not so conspicuous as in the preceding, usually about 1 cm. broad. The plant derives its common name from the arrangement of sepals and petals in the form of a St. Andrew's cross.

2. HYPERICUM L. ST. JOHN'S-WORT.

Plants tall shrubs.
  Flowers 10–20 mm. broad; pods 10–15 mm. long ....**1. H. prolificum.**
  Flowers 8–12 mm. broad; pods 5–8 mm. long ....**2. H. densiflorum.**
Plants herbs, sometimes woody at the base.
  Stamens numerous (15–40); flowers 7–25 mm. broad; plants perennial.
    Leaves linear or oblong, not conspicuously black-dotted, 8–23 mm. long, 1–8 mm. wide...**3. H. perforatum.**
    Leaves broadly oblong, oval, or ovate-lanceolate, conspicuously black-dotted. 25–75 mm. long, 8–16 mm. wide..........................**4. H. denticulatum.**
  Stamens few (5–12); flowers 1–7 mm. broad; plants usually annual.
    Leaves ovate, oval, or oblong, 5–7-nerved ....**5. H. mutilum.**
    Leaves linear, 3-nerved...**6. H. canadense.**

1. Hypericum prolificum L. SHRUBBY ST. JOHN'S-WORT.
Sandy or rocky soil; common. July. Eastern U. S.
Internodes of the younger branches more or less exposed.

2. Hypericum densiflorum Pursh.
Pine barrens; rare; reported from Surrattsville and Berwyn. Eastern U. S.
Much branched above, the branches leafy, the internodes hardly visible.

3. **Hypericum perforatum** L. COMMON ST. JOHN'S-WORT.

Fields and waste places; frequent. July. Eastern U. S.; naturalized from Eur.

4. **Hypericum denticulatum** Walt.

Damp places; common. July. Eastern U. S. (*H. punctatum* Lam.; *H. corymbosum* Muhl.)

Usually taller than *H. perforatum* and not so much branched.

5. **Hypericum mutilum** L.

Low grounds; frequent. Aug.–Oct. Eastern N. Amer.

A small-flowered small-capsuled species (capsules 1–2 mm. long), with 4-angled branchlets. A specimen of this species was reported by Steele as *H. majus* (A. Gray) Britton.

6. **Hypericum canadense** L.

Wet or dry soil; frequent. Aug.–Oct. Eastern N. Amer.

3. SAROTHRA L.

1. **Sarothra gentianoides** L.

Sandy or rocky soil; frequent. Aug.–Sept. Eastern U. S. (*Hypericum sarothra* Michx.; *H. gentianoides* B. S. P.)

4. TRIADENUM Raf.

1. **Triadenum virginicum** (L.) Raf. MARSH ST. JOHN'S-WORT.

Marshes or swamps; frequent north and east of Washington. July–Aug. Eastern N. Amer. (*Elodea virginica* Nutt.; *Hypericum virginicum* L.)

Distinguished from our other members of the family by the distinct reddish tinge, and by the large leaves, which are frequently 4 cm. long.

104. ELATINACEAE. Waterwort Family.

1. ELATINE L. WATERWORT.

1. **Elatine americana** (Pursh) Arn.

Reported by Holm from near Chain Bridge, on the Virginia shore of the Potomac. Widely distributed in N. Amer.

It may be found near or submerged in water; characterized by membranaceous stipules between opposite leaves, and minute axillary flowers.

105. CISTACEAE. Rock-rose Family.

Petals 5, yellow, crumpled in bud, fugacious or sometimes wanting; style short; ovules numerous in the petal-bearing flowers............**1. HELIANTHEMUM.**

Petals 3, not yellow, flat in bud, persistent; style none; pod partly 3-celled, the imperfect partitions bearing broad 2-seeded placentae..............**2. LECHEA.**

1. HELIANTHEMUM Mill.

1. **Helianthemum canadense** (L.) Michx. FROSTWEED.

Dry soil; frequent northeast of Washington. May. Eastern U. S. (*Crocanthemum canadense* Britton.)

An erect hoary-pubescent perennial herb, with oblong-linear leaves, the flowers of two kinds, the early ones large and solitary, the later ones small and clustered.

2. LECHEA L. PINWEED.

Leaves of the basal shoots elliptic or oblong, not more than three times as long as broad.

Outer sepals exceeding the inner ones; panicle very leafy.............**1. L. minor.**

Outer sepals shorter than the inner; panicle usually not very leafy.
2. L. racemulosa.

Leaves of the basal shoots narrowly lanceolate to linear, usually more than 3 times as long as broad.
  Stem leaves narrowly linear; inner sepals 1-nerved.................**3. L. tenuifolia.**
  Stem leaves oblong-linear; inner sepals 3-nerved....................**4. L. leggettii.**

1. Lechea minor L.

Dry soil; between Chevy Chase and Glen Echo. May. Eastern U. S.

Erect, 30–60 cm. high, with mostly oval or oblong leaves.

2. Lechea racemulosa Lam.

Dry or rocky soil; common. Eastern U. S.

Erect, 30–50 cm. high, with linear-oblong stem leaves.

3. Lechea tenuifolia Michx.

Dry sterile soil; infrequent; Addison Heights, Hyattsville. Eastern U. S.

A low diffuse plant, usually not more than 20 cm. high, with very narrow stem leaves, these about 1 mm. wide and 1–1.5 cm. long.

4. Lechea leggettii Britt. & Holl.

Dry soil; frequent. Eastern U. S.

Plants 30–50 cm. high, the stem leaves 3–4 mm. wide and 1.5 cm. long.

106. VIOLACEAE. Violet Family.

Sepals not prolonged and auricled at the base; petals greenish; plants usually 60–80 cm. high, the stout stems bearing numerous elliptic or oval, entire leaves.
1. CUBELIUM.
Sepals prolonged and auricled at the base; petals violet, white, or yellow; plants usually less than 40 cm. high, the stems slender or none..............**2. VIOLA.**

1. CUBELIUM Raf.

1. Cubelium concolor (Forst.) Raf. GREEN VIOLET.

Low rich woods along the Potomac; rare. Apr.–May. Eastern U. S. (*Ionidium concolor* Benth. & Hook.; *Hybanthus concolor* Spreng.; *Solea concolor* Ging.)

2. VIOLA L.[1] VIOLET.

Plants with slender, elongate, often branched, leafy stems at flowering time.
  Stipules entire or nearly so, the lower ones scarious; petals yellow; capsules usually densely woolly...**1. V. eriocarpa.**
  Stipules deeply toothed or lobed, green; petals violet or white; ripe capsules straw-colored.
    Plants perennial, with rootstocks; stipules small, deeply toothed.
      Petals pale violet; leaves rounded at the apex.................**2. V. conspersa.**
      Petals white or creamy white; upper leaves very acute............**3. V. striata.**
    Plants annual, with fibrous roots; stipules large and leaflike, coarsely lobed, the lobes not gland-tipped.......................................**4. V. rafinesquii.**
Plants stemless, the leaves and flower stalks rising directly from a rootstock, the plants sometimes developing long slender runners.
  Plants developing long slender runners after flowering; rootstocks long and very slender; petals white, the lower lined with purple.
    Leaves never heart-shaped, tapering or truncate at the base.
      Leaves lanceolate, usually less than 2 cm. wide, several times as long as broad. long-tapering at the base...............................**5. V. lanceolata.**
      Leaves ovate, usually more than 2 cm., often 5 cm. wide, not more than twice as long as broad, usually truncate at the base...........**6. V. primulifolia.**

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[1] The author of the account of this genus is indebted to Dr. Ezra Brainerd for generous assistance in the determination of the local violets, especially those of supposed hybrid origin.

Leaves heart-shaped, deeply lobed at the base.

Leaves glabrous...**7. V. pallens.**

Leaves finely hairy on the upper surface.........................**8. V. blanda.**

Plants without runners, the rootstocks stout and fleshy; petals violet or purplish (rarely abnormally white).

Plants without cleistogamous flowers; none of the petals bearded. Leaves divided into numerous narrow lobes.........................**9. V. pedata.**

Plants with cleistogamous flowers; lateral petals bearded.

Leaves neither heart-shaped nor kidney-shaped, triangular, oblong, ovate, or deeply lobed, or sometimes almost heart-shaped with large coarse teeth near the base.

Leaves all deeply divided into numerous narrow lobes....**10. V. brittoniana.**

Leaves not divided, sometimes with a few small lobes near the base.

Leaves broadly triangular when mature, glabrous or nearly so. **11. V. emarginata.**

Leaves lanceolate to ovate-oblong.

Leaves glabrous or nearly so, long-petioled, mostly lanceolate or triangular-lanceolate.................................**12. V. sagittata.**

Leaves copiously hairy, short-petioled, ovate-oblong..**13. V. fimbriatula.**

Leaves, at least some of them, heart-shaped or kidney-shaped, finely and evenly toothed, some of the leaves, also, often lobed.

Leaves in part deeply lobed.

Leaves, except the earliest ones, divided almost or quite to the midrib into numerous narrow lobes, glabrous or nearly so......**14. V. stoneana.**

Leaves mostly with short lobes, the lobes few (usually 3 or 5) and broad, usually very hairy.......................................**15. V. triloba.**

Leaves not lobed.

Leaves finely hairy on one or both surfaces.

Leaves loosely hairy beneath, usually erect; seeds dark brown. **16. V. sororia.**

Leaves glabrous beneath, with fine appressed hairs on the upper surface, often lying flat on the ground; seeds buff..........**17. V. hirsutula.**

Leaves glabrous or practically so, the hairs, if present, mostly confined to the veins.

Beard of the lateral petals of strongly knobbed hairs; cleistogamous flowers long and slender, on erect peduncles, their capsules green. **18. V. cucullata.**

Beard of the lateral petals not knobbed; cleistogamous flowers short, ovoid, their capsules usually purplish.

Cleistogamous flowers on ascending peduncles; capsules 5–8 mm. long; seeds buff; leaves mostly longer than broad..**19. V. affinis.**

Cleistogamous flowers on short prostrate peduncles; capsules 10–15 mm. long; seeds dark brown; full-grown leaves mostly as broad as long, often broader........................**20. V. papilionacea.**

Viola pectinata Bicknell was reported from Riverdale by House. No specimens have been seen by the writer.

1. Viola eriocarpa Schwein. YELLOW VIOLET.

Moist woods, often in alluvial soil, frequent and sometimes abundant. Apr.–May. Northern states, south to Ga. (*V. pubescens*, *V. pubescens eriocarpa*, and *V. glabella* of Ward's Flora; *V. scabriuscula* Schwein.)

The capsules are usually densely woolly, but sometimes glabrous.

2. Viola conspersa Reichenb. DOG VIOLET

Low ground or shaded hillsides; Rock Creek Park, and between Cabin John and Rockville; rare. Apr.–May. Eastern N. Amer.

The species has been reported from our region under the incorrect names of *V. labradorica* and *V. canina sylvestris*.

3. Viola striata Ait. CREAM VIOLET.

Low woods, usually in alluvial soil, along the Potomac; sometimes cultivated and escaping. Apr.–May. Northern states, south to Ga.

A tuft of flowering plants is shown in plate 25B.

4. Viola rafinesquii Greene. FIELD PANSY.

Fields and open woods; common. Apr.–May. Eastern U. S. (*V. tenella* Muhl.; *V. tricolor arvensis* of Ward's Flora.)

Viola tricolor L., the pansy, sometimes escapes to waste ground.

5. Viola lanceolata L. LANCE-LEAF VIOLET.

In bogs; frequent about Hyattsville, and in a few localities elsewhere. Apr.–May. Eastern U. S.

6. Viola primulifolia L. PRIMROSE VIOLET.

Low wet ground, chiefly on the Coastal Plain; common. Apr.–May. Eastern N. Amer.

7. Viola pallens (Banks) Brainerd.

In bog below Great Falls, Va. Northern states, south to S. C.

8. Viola blanda Willd. WHITE VIOLET.

On rocks along the Patuxent at Laurel; Paint Branch. Apr.–May. Eastern N. Amer.

Viola odorata L., the English violet, was reported from Accotink by Holm. Native of Eur.; often cultivated and sometimes escaping.

9. Viola pedata L. PANSY VIOLET.

Dry open slopes or in thin woods; common. Apr.–May. Eastern U. S. (*V. pedata bicolor* Pursh.)

Known also as bird-foot violet. In the typical form of the species the two upper petals are dark violet, the lower ones pale lilac-purple. In another form all the petals are lilac-purple.

10. Viola brittoniana Pollard. BRITTON VIOLET.

Moist sandy soil; vicinity of Hyattsville, Bladensburg, and Riverdale. Apr.–May. Me. to Va.

This is one of our handsomest violets; the large flowers are borne on remarkably long peduncles.

VIOLA BRITTONIANA × CUCULLATA House.

About Riverdale and Hyattsville. (*V. notabilis* House.) This is a plant of very distinctive appearance. The leaves are broadly ovate-triangular, coarsely and irregularly but shallowly toothed or lobed. The cleistogamous flowers are borne on very slender peduncles longer than the leaves.

VIOLA BRITTONIANA × EMARGINATA House.

Hyattsville, according to House. The leaves in outline resemble those of *V. brittoniana*, but they are much less deeply lobed.

VIOLA BRITTONIANA × SAGITTATA House.

Near Riverdale. The leaf outline strongly suggests *V. sagittata*, but the leaves are deeply laciniate-lobed near the base.

11. Viola emarginata (Nutt.) Le Conte.

Dry woods and hillsides, chiefly on the Coastal Plain; common. Apr.–May. N. Y. to Ga.

The typical form of the species has broadly triangular leaves, with coarse teeth or lobes at the base; the earliest leaves are usually finely and almost evenly toothed, and they are narrower than the later ones.

VIOLA EMARGINATA × FIMBRIATULA Brainerd.

Frequent with *V. emarginata.* The leaves resemble those of either parent, but they are more pubescent than in *V. emarginata* and less so than in *V. fimbriatula.*

VIOLA EMARGINATA × HIRSUTULA Brainerd.

Takoma Park. Leaves in shape like those of *V. emarginata*, but with the peculiar pubescence of *V. hirsutula.* (*V. emarginata villosa* House.)

VIOLA EMARGINATA × PAPILIONACEA House.

Takoma Park (the type locality) and Glen Carlyn. The leaves resemble those of *V. papilionacea*, but they are more deeply toothed near the base.

VIOLA EMARGINATA × SAGITTATA Brainerd.

Frequent with the parent species. Both *V. emarginata* and *V. sagittata* are glabrous and the hybrid differs only in having the leaves intermediate in form between the two.

11a. Viola emarginata acutiloba Brainerd.

Brookland, Takoma Park, and Hyattsville. Distinguished from the species by having the mature leaves 5-cleft or 5-parted, the middle lobe lance-oblong, the lateral and basal lobes also long, but shorter than the terminal one. It is known from Staten Isl., N. Y., and from our region.

VIOLA EMARGINATA ACUTILOBA × FIMBRIATULA Brainerd.

Brookland. In outline the leaves resemble those of *V. emarginata acutiloba*, but they are more or less pubescent.

VIOLA EMARGINATA ACUTILOBA × PAPILIONACEA Brainerd.

Brookland. Leaves in outline almost like those of *V. papilionacea*, but the margins deeply lobed in the lower half or two-thirds.

VIOLA EMARGINATA ACUTILOBA × SAGITTATA Brainerd.

Takoma Park and Hyattsville. Leaves in outline much like those of *V. sagittata*, but slightly broader and with few deep narrow lobes at the base.

12. Viola sagittata Ait. ARROW-LEAF VIOLET.

Moist woods or meadows; common. Apr.–May. Northern states, south to Ga.

The leaves and stems are usually glabrous, but sometimes finely pubescent.

13. Viola fimbriatula J. E. Smith.

Dry fields and hillsides, chiefly on the Coastal Plain; common. Apr.–May. Eastern N. Amer. (*V. ovata* Nutt.; *V. sagittata hicksii* Pollard; *V. sagittata* of Ward's Flora, in part.)

VIOLA FIMBRIATULA × PAPILIONACEA Brainerd.

Along the Potomac and Eastern Branch. Leaves similar to those of *V. papilionacea* but narrower, sometimes slightly lobed at the base, and more or less pubescent.

VIOLA FIMBRIATULA × SAGITTATA Brainerd.

Rather widely distributed in our region. Leaves in outline intermediate between those of the two species and very variable, usually copiously pubescent. (*V. sagittata* of Ward's Flora, in part.)

Another hybrid, *V. fimbriatula × villosa* (=*hirsutula* Brainerd) was reported by House from Takoma Park. No material has been seen by the writer.

14. Viola stoneana House.

Usually in thin moist woods; frequent. May. N. J. to Md. (*V. septemloba* of many authors, not of Le Conte; *V. cucullata palmata* of Ward's Flora, in part.)

VIOLA STONEANA × TRILOBA Brainerd.

Widely distributed in our region. Leaves cut as in *V. stoneana*, but more or less pubescent as in *V. triloba.*

15. Viola triloba Schwein.

Dry or moist woods; frequent. Apr.–May. New Eng. to Ga. (*V. palmata* of some authors, not of Linnaeus; *V. vespertilionis* Greene; *V. ornithodes* Greene.)

V. ornithodes was described from plants growing in Rock Creek Park; *V. vespertilionis* from specimens from Brookland.

16. Viola sororia Willd. DOWNY VIOLET.

Moist meadows or banks or in rather dry woods; frequent along the Potomac, infrequent elsewhere. Apr.–May. Northern states, south to N. C. (*V. laetecaerulea* Greene.)

17. Viola hirsutula Brainerd.

Dry fields or hillsides, commonly in pine woods; frequent. Apr.–May. N. Y to Ga. (*V. villosa* of many authors, not of Walter; *V. cucullata cordata* of Ward's Flora.)

VIOLA HIRSUTULA × SORORIA Dowell.

Naucks and Hyattsville. Leaves in outline similar to those of *V. sororia*, larger than those of *V. hirsutula*, with the characteristic pubescence of the latter.

VIOLA HIRSUTULA × STONEANA Brainerd.

Hyattsville. Leaves lobed much as in *V. stoneana*, but less deeply, with the pubescence of *V. hirsutula*. (*V. stoneana × villosa* House.)

VIOLA HIRSUTULA × TRILOBA Brainerd.

Glen Sligo. Leaves with the pubescence of *V. hirsutula;* lobed as in *V. triloba*, or some of them only coarsely toothed.

18. Viola cucullata Ait.

Along streams and in bogs; frequent. Apr.–May. Eastern N. Amer. (*V. macrotis* Greene; *V. fontana* Greene.)

The type of *V. macrotis* is from Surrattsville; that of *V. fontana* was collected along Rock Creek just outside the District.

VIOLA CUCULLATA × PAPILIONACEA Brainerd.

Collected at several stations. In general characters almost intermediate between the parents.

A plant from Hyattsville was reported by House as *V. cucullata × emarginata* Brainerd. The writer has not seen the specimens. The Long Island plant (*V. lavandulacea* Bicknell) to which this interpretation was given is now believed to be *V. cucullata × primulifolia*. The Hyattsville plant is considered a true hybrid between *V. cucullata* and *V. emarginata*.

19. Viola affinis Le Conte. SLENDER VIOLET.

Moist meadows and woods; common. Apr.–May. Eastern U. S. (*V. nepetaefolia* Greene.)

The type of *V. nepetaefolia* was collected beyond Anacostia.

VIOLA AFFINIS × CUCULLATA Brainerd.

At several stations north of Washington. Differing from *V. affinis* in the larger leaves, long slender cleistogamous flowers, and long-auricled sepals; from *V. cucullata* in the very acute leaves and brown-dotted capsules.

VIOLA AFFINIS × HIRSUTULA Brainerd.

Several scattered stations. Leaves in outline like those of *V. affinis*, with the pubescence of *V. hirsutula*. (*V. affinis × villosa* Brainerd.)

VIOLA AFFINIS × PAPILIONACEA House.

Widely distributed in our region; the type from Woodridge. Leaves larger than those of *V. affinis*, but usually resembling them in shape and texture; flower and fruit characters intermediate between those of the parents. (*V. filicetorum* Greene.)

V. filicetorum was based upon material from our region.

VIOLA AFFINIS × SAGITTATA Brainerd.

Patuxent. Leaves intermediate between those of the two parents; capsules minutely pubescent as in *V. affinis*.

20. Viola papilionacea Pursh. BUTTERFLY VIOLET.

In all kinds of situations; very abundant; our commonest violet. Apr.–May. Eastern U. S. (*V. domestica* Bicknell; *V. familiaris* Greene; *V. cucullata* of Ward's Flora; *V. communis* Pollard.)

The types of *V. familiaris* and *V. communis* are from our region.

VIOLA PAPILIONACEA × HIRSUTULA Brainerd.

Collected at several scattered stations. Leaves in outline intermediate between those of the parents, with the pubescence of *V. hirsutula*. (*V. papilionacea* × *villosa* Pollard, the type from Darlecarlia Reservoir.)

VIOLA PAPILIONACEA × SAGITTATA Brainerd.

Darlecarlia Reservoir and Takoma Park. Leaves regularly toothed, narrower than in *V. papilionacea*. (*V. conjugens* Greene.)

VIOLA PAPILIONACEA × SORORIA Brainerd.

Collected at several scattered stations. Leaves like those of the parents, but only very slightly pubescent. (*V. grandis* Greene; *V. induta* Greene.)

The type localities of *V. grandis* and *V. induta* are within our region.

VIOLA PAPILIONACEA × TRILOBA Brainerd.

Common with the parents. Leaves less deeply lobed than in *V. triloba*, more or less pubescent.

107. PASSIFLORACEAE. Passion-flower Family.

1. PASSIFLORA L. PASSION-FLOWER.

Passiflora incarnata L., maypops or maracocks, is cultivated within our limits, usually trained over trellises and pergolas. Native from central Va. southward.

1. Passiflora lutea L.

Common in thickets, especially along the Potomac. May–Aug. Southeastern U. S.

108. CACTACEAE. Cactus Family.

1. OPUNTIA Mill.

1. Opuntia vulgaris Mill. PRICKLY PEAR.

Rocky or sandy soil; Plummers Island and Great Falls. June. Eastern U. S. (*O. opuntia* Karst.)

A tuft of plants in fruit is shown in plate 34B.

109. DAPHNACEAE. Leatherwood Family.

1. DIRCA L.

1. Dirca palustris L. LEATHERWOOD. MOOSEWOOD.

Low places along the Potomac. Apr. Eastern U. S.

110. LYTHRACEAE. Loosestrife Family.

Calyx tube short, campanulate or hemispheric. Flowers regular.
  Leaves opposite; flowers small, solitary or few; petals 4; low annual herbs. 1. **ROTALA.**
  Leaves mostly whorled; flowers large, densely clustered; petals 5 (rarely 4); large aquatic perennial herbs....................................2. **DECODON.**
Calyx tube cylindric or tubular.
  Flowers regular; calyx tube symmetric; plants perennial, not viscid-hairy. 3. **LYTHRUM.**
  Flowers irregular; calyx tube spurred or enlarged on one side at base; plants annual, viscid-hairy...4. **PARSONSIA.**

1. ROTALA L.

1. Rotala ramosior (L.) Koehne. TOOTH-CUP.

Low or wet ground; frequent. Aug.–Sept. Eastern U. S. (*Ammannia humilis* Michx.)

2. DECODON J. F. Gmel.

1. Decodon verticillatus (L.) Ell. SWAMP LOOSESTRIFE.

Swampy ground; rare. Aug. Eastern U. S. (*Nesaea verticillata* H. B. K.)

The stems are 1–2 meters high, and root from the tip when they reach the mud.

3. LYTHRUM L. LOOSESTRIFE.

Flowers solitary, axillary, small; stamens not more numerous than the petals; leaves alternate; stems glabrous..**1. L. alatum.**

Flowers in dense spikes, large; stamens twice as many as the petals; leaves opposite or whorled; stems pubescent....................................**2. L. salicaria.**

1. Lythrum alatum Pursh.

Low grounds; frequent along the Potomac. June–Aug. Eastern N. Amer.

A tall wandlike perennial; stem angled and often slightly winged.

2. Lythrum salicaria L. PURPLE LOOSESTRIFE.

Wet meadows and swamps. June–July. Hunting Creek and perhaps elsewhere. Northeastern states; naturalized from Eur.

4. PARSONSIA P. Br.

1. Parsonsia petiolata (L.) Rusby.

Dry soil; frequent. Aug.–Oct. Eastern U. S. (*Cuphea viscosissima* Jacq.; *C. petiolata* Koehne.)

111. MELASTOMATACEAE. Meadow beauty Family.

1. RHEXIA L. MEADOW BEAUTY.

Stems not angled; leaves oblong or elliptic, mostly petioled...........**1. R. mariana.**

Stems square or angled; leaves oval or ovate, mostly sessile...........**2. R. virginica.**

1. Rhexia mariana L.

Swamps northeast of Washington; infrequent. Aug. Eastern U. S.

2. Rhexia virginica L.

Swamps; frequent. July–Sept. Eastern U. S.

112. ONAGRACEAE. Evening primrose Family.

Petals and calyx lobes 2 each; fruit burlike. Leaves thin, opposite; flowers white. **1. CIRCAEA.**

Petals and calyx lobes 4 each or more; fruit not burlike.
  Fruit indehiscent, nutlike. Leaves alternate; flowers white or pink, in wandlike spikes...**2. GAURA.**
  Fruit a many-seeded capsule, opening by valves or by a pore.
    Calyx tube not prolonged beyond the ovary.
      Seeds with a tuft of silky hairs; calyx deciduous. Leaves alternate; flowers magenta ....**3. CHAMAENERION.**
      Seeds naked; calyx persistent.
        Stamens 8–12, in 2 rows. Leaves alternate; flowers yellow...**4. JUSSIAEA.**
        Stamens 4, in 1 row.
          Leaves opposite; stem creeping or floating; petals none, or small and pink. **5. ISNARDIA.**
          Leaves alternate; stems erect or ascending; petals conspicuous, yellow. **6. LUDWIGIA.**

Calyx tube prolonged beyond the ovary.
  Seeds furnished with a tuft of silky hairs; flowers pink; leaves opposite, or alternate above.......................................7. **EPILOBIUM.**
  Seeds naked; flowers yellow; leaves alternate.
    Stamens equal in length; fruit long, cylindric.
      Plants large (30–150 cm. high), rather stout; leaves minutely toothed; seeds horizontal, angled..................................8. **OENOTHERA.**
      Plants small (10–70 cm. high), slender; leaves lobed; seeds ascending, not angled.......................................9. **RAIMANNIA.**
    Stamens unequal in length, the alternate longer; fruit short, obovoid. Leaves linear to oblong, entire or with very small teeth.........10. **KNEIFFIA.**

1. CIRCAEA L. Enchanter's nightshade.

1. **Circaea latifolia** Hill.
Woods; common. June–Aug. Eastern U. S. (*C. lutetiana* of American authors.)

2. GAURA L.

1. **Gaura biennis** L.
Dry soil; frequent. Aug.–Oct. Eastern N. Amer.

3. CHAMAENERION Adans.

1. **Chamaenerion angustifolium** (L.) Scop. Purple fireweed.
Clearings and newly burned lands; infrequent. Aug. Widely distributed in N. Amer.; also in Eur. and Asia. (*Epilobium angustifolium* L.)

4. JUSSIAEA L.

1. **Jussiaea decurrens** (Walt.) DC.
Wet places along Hunting Creek. Aug.–Sept. Southeastern U. S., north to Md.

5. ISNARDIA L.

1. **Isnardia palustris** L. Water purslane.
Ditches and swamps along the Potomac and its larger tributaries; frequent. July–Aug. Widely distributed in N. Amer. and in the Old World. (*Ludwigia palustris* Ell.)

A succulent plant with ovate leaves tapering to a slender petiole. It forms a characteristic reddish mat in our small streams and swamps.

6. LUDWIGIA L.

Plants hirsute; capsules bristly-pubescent; leaves oblong, or the upper lanceolate, blunt at both ends, sessile.....................................1. **L. hirtella.**
Plants glabrous; capsules glabrous; leaves lanceolate or linear-lanceolate, acute or pointed at both ends, short-petioled..........................2. **L. alternifolia.**

1. **Ludwigia hirtella** Raf.
Holmead Swamp; not collected recently. July–Aug. N. J. to Tex.

2. **Ludwigia alternifolia** L. Seed-box.
Low woods and swamps; common. June–Aug. Eastern U. S.

7. EPILOBIUM L. Willow-herb.

1. **Epilobium coloratum** Muhl.
Low ground; frequent. Aug. Eastern U. S.

8. OENOTHERA L. EVENING PRIMROSE.

1. **Oenothera biennis** L.

Open places; common. July–Sept. Eastern N. Amer.

An extremely variable species, in recent years the subject of extensive investigations in plant breeding. The species is considered to consist of numerous "elementary species," three of which have been described by Bartlett[1] from our region: *O. stenomeres*, *O. brevicapsula*, and *O. ruderalis*. *O. stenomeres* is a form with linear petals.

9. RAIMANNIA Rose.

1. **Raimannia laciniata** (Hill) Rose.

Dry open places, northeastward; infrequent. May–July. Eastern U. S. (*Oenothera sinuata* L.; *O. laciniata* Hill.)

10. KNEIFFIA Spach. SUNDROPS.

Flowers small (usually 1 cm. broad or less). Flowers mostly borne on the upper third of the plant and separated from the main leafy portion by an elongate internode. 1. **K. pumila.**
Flowers large (1.5–2.5 cm. broad or more).
  Pedicels elongate, longer than the capsule.................2. **K. longipedicellata.**
  Pedicels shorter than the capsule.
    Capsule markedly club-shaped, tapering from the summit to the base. 3. **K. linearis.**
    Capsule oblong or nearly so, tapering slightly at the base.......4. **K. fruticosa.**

1. **Kneiffia pumila** (L.) Spach.

Woods and open places; infrequent. May–June. Eastern N. Amer. (*Oenothera pumila* L.)

2. **Kneiffia longipedicellata** Small.

Moist soil, chiefly eastward; frequent. May–July. Eastern U. S. (*Oenothera longipedicellata* Robinson.)

3. **Kneiffia linearis** (Michx.) Spach.

Dry fields; frequent. May–June. Eastern U. S. (*Oenothera fruticosa linearis* S. Wats.; *O. linearis* Michx.)

4. **Kneiffia fruticosa** (L.) Raim.

Dry soil; common. May–June. Eastern U. S. (*Oenothera fruticosa* L.)

Trapa natans L., of the family Trapaceae, native of Eur., was formerly established in fish ponds in Potomac Park but is now extinct.

113. HALORAGIDACEAE. Water milfoil Family.

Leaves all dissected into hairlike lobes......................1. **MYRIOPHYLLUM.**
Leaves, at least the upper ones, simple, shallowly toothed, the lower ones usually dissected ....2. **PROSERPINACA.**

1. MYRIOPHYLLUM L. WATER MILFOIL.

1. **Myriophyllum spicatum** L.

Hunting Creek. Widely distributed in N. Amer., Eur., and Asia.

Myriophyllum proserpinacoides Gill., parrot's-feather, a native of Chile, is cultivated in aquaria. For several years this plant has been grown in two fountains on the north side of the Treasury Building, where it makes a striking display and attracts much attention.

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[1] Cybele Columb. 1: 37–56. 1914.

2. PROSERPINACA L.

1. Proserpinaca palustris L. MERMAID-WEED.
Shallow water; along the Potomac and near Bladensburg; infrequent. June–July. Widely distributed in N. Amer.

114. ARALIACEAE. Ginseng Family.

Hedera helix L., English ivy, native of Eur. and common in cultivation, has occasionally spread to roadsides or woods.

Leaves whorled or opposite; leaflets usually 3 or 5........................1. **PANAX.**
Leaves alternate; leaflets numerous...2. **ARALIA.**

1. PANAX L.

Leaflets all slender-stalked, broadly obovate or oval, taper-pointed; roots long and thick..1. **P. quinquefolium.**
Leaflets, at least the lateral ones, sessile, mostly oblanceolate to oblong, obtuse or acutish; roots globose......................................2. **P. trifolium.**

1. Panax quinquefolium L. GINSENG.
Rich woods; rare. July–Aug. Eastern N. Amer. (*Aralia quinquefolia* Decaisne & Planch.)

The roots are much used in China for their supposed medicinal virtues, and the plants are cultivated in the United States to obtain the roots for export.

2. Panax trifolium L. GROUNDNUT.
Moist woods and thickets; occasional. Apr.–May. Eastern N. Amer. (*Aralia trifolia* Decaisne.)

2. ARALIA L.

Plants shrubby, armed with stout spines; leaflets thick, pale beneath....1. **A. spinosa.**
Plants herbaceous, unarmed; leaflets thin, green.
  Umbels of flowers numerous, in racemes or panicles; stems branched.2. **A. racemosa.**
  Umbels of flowers 2–7, arranged in an umbel; stems simple........3. **A. nudicaulis.**

1. Aralia spinosa L. ANGELICA TREE.
Moist woods; infrequent. Aug.–Sept. Eastern U. S.

Stems simple or branched, usually 3–5 meters high. Sometimes known as Hercules' club.

2. Aralia racemosa L. SPIKENARD.
Rich woods; infrequent. July–Aug. Eastern N. Amer.
The roots are used in medicine.

3. Aralia nudicaulis L. WILD SARSAPARILLA.
Moist woods; frequent. May. Eastern N. Amer., westward to the Rocky Mts.
The roots are used as a substitute for the official sarsaparilla.

115. APIACEAE. Parsley Family.

Besides the genera listed below, the following plants of European origin have been collected in our region, most of them as mere waifs: *Bupleurum rotundifolium* L. (Washington, 1889, *Coville*); *Carum carui* L., caraway (waste ground along the river front, 1899, *Steele*, two plants found); *Foeniculum vulgare* Hill, fennel (reported by Steele); *Scandix pecten-veneris* L. (waste ground, 1898, *Steele*); *Seseli libanotis* Koch (Maryland Agricultural College, 1905, *J. B. S. Norton*, one plant found).

Stem and basal leaves simple, not lobed. Flowers white or yellowish.
  Leaves linear or linear-oblong, at least some of them spine-toothed; flowers in dense heads...1. **ERYNGIUM.**
  Leaves rounded, not spine-toothed; flowers in umbels......15. **HYDROCOTYLE.**

Stem leaves compound or lobed, the basal leaves simple or compound.
  Fruit (even when very young) covered with straight or hooked bristles.
    Flowers sessile or nearly so, yellowish or white; leaves digitately compound, of 3–7 leaflets. Fruit covered with hooked bristles..........**2. SANICULA.**
    Flowers pediceled, white; leaves pinnately compound, usually with numerous divisions.
      Bracts at the base of the umbel large, divided into linear lobes. Fruit covered with barbed bristles; plants very hairy....................**3. DAUCUS.**
      Bracts at the base of the umbel small and entire or none.
        Plants annual; fruit obtuse at the base, covered with hooked bristles. **4. TORILIS.**
        Plants perennial; fruit very acute at the base, with straight bristles. **5. OSMORRHIZA.**
  Fruit not bristly, sometimes pubescent.
    Leaflets entire. Perennial; flowers yellow....................**13. TAENIDIA.**
    Leaflets or leaves toothed or lobed.
      Flowers yellow or purplish. Plants perennial.
        Leaves pinnate, the leaflets sessile, several; fruit flattened; bractlets none at the base of the pedicels..............................**8. PASTINACA.**
        Leaves simple or ternately compound, the leaflets usually stalked, often only 3; fruit not flattened; bractlets present at the base of the pedicels.
          Fruit winged; leaves all divided.........................**12. THASPIUM.**
          Fruit not winged; leaves sometimes simple...................**14. ZIZIA.**
      Flowers white.
        Leaves once pinnate, the leaflets linear or lanceolate, finely toothed, sessile. Plants perennial.
          Fruit winged; bracts at the base of the umbel 3 or fewer, filiform, sometimes wanting; pedicels 6–18 mm. long................**11. OXYPOLIS.**
          Fruit not winged; bracts at the base of the umbel 6 or more, conspicuous; pedicels 2–6 mm. long....................................**18. SIUM.**
        Leaves not once pinnate with narrow-toothed leaflets, 2 or 3 times pinnate or else 1–3 times ternate, the leaflets usually coarsely toothed or lobed, usually stalked.
          Bractlets none at the base of the pedicels. Leaves 3-parted; plants perennial, glabrous..**7. DERINGA.**
          Bractlets present at the base of the pedicels.
            Plants annual, low and slender.
              Bracts none at the base of the umbel; plants sparsely pubescent. **6. CHAEROPHYLLUM.**
              Bracts present at the base of the umbel, divided into linear lobes; plants glabrous..............................**19. PTILIMNIUM.**
            Plants perennial, tall and stout, or in one species very low but with tuberous roots.
              Plants low and slender, usually less than 15 cm. high, flowering in early spring; umbel with a leaf at the base; roots bulblike. **16. ERIGENIA.**
              Plants tall and coarse, flowering in summer or autumn; umbel never with a leaf at the base; roots not bulblike.
                Branches of the umbel pubescent; fruit winged.
                  Leaflets usually 3, very hairy, deeply lobed; fruit winged on the margin.......................................**9. HERACLEUM.**
                  Leaflets more than 3, nearly or quite glabrous, shallowly toothed; fruit winged on the back....................**10. ANGELICA**

Branches of the umbel glabrous; fruit not winged.
  Leaflets deeply lobed; bracts present at the base of the umbel; calyx teeth none; ribs of the fruit slender, not corky. **17. CONIUM.**
  Leaflets evenly toothed; bracts none or soon deciduous; calyx teeth present; ribs of the fruit thick, corky.....**20. CICUTA.**

1. ERYNGIUM L.

Leaves net-veined; bracts at the base of the head toothed........**1. E. virginianum.**
Leaves parallel-veined; bracts entire............................**2. E. aquaticum.**

1. Eryngium virginianum Lam.

Marshes along the lower Potomac and its tributaries; frequent. July–Oct. N. J. to Tex.

2. Eryngium aquaticum L. BUTTON SNAKEROOT.

Dry sandy bank, Cabin John, Aug., 1904 (*J. H. Painter*). Eastern and central U. S. (*E. yuccaefolium* Michx.)

Eryngium planum L., a European species with broad cordate leaves, was collected along Massachusetts Avenue in 1899 (*Steele*).

2. SANICULA L. BUR SNAKEROOT.

Styles shorter than the bristles of the fruit; staminate flowers not in separate heads; flowers white..**1. S. canadensis.**
Styles longer than the bristles; staminate flowers partly in separate heads; flowers greenish yellow or greenish white.
  Calyx teeth lanceolate; fruit about 6 mm. long; flowers greenish white. **2. S. marylandica.**
  Calyx teeth ovate; fruit about 3 mm. long; flowers greenish yellow..**3. S. gregaria.**

1. Sanicula canadensis L.

Damp woods; common. May–June. Widely distributed in N. Amer.

2. Sanicula marylandica L.

Damp woods, chiefly along Rock Creek and the upper Potomac; frequent. May–June. Widely distributed in N. Amer.

3. Sanicula gregaria Bicknell.

Moist woods, chiefly westward. May. Eastern N. Amer.

3. DAUCUS L.

1. Daucus carota L. CARROT.

Dry fields and waste ground; abundant. May–Aug. Native of Eur. and Asia; widely naturalized in N. Amer.

The flowers are white, but the central one of the umbel is usually dark purple; sometimes all the flowers are pinkish.

4. TORILIS Adans.

1. Torilis anthriscus (L.) Gmel. HEDGE PARSLEY.

Waste ground about Washington; probably not established. June–July. Native of Eur.; adventive in the eastern U. S. (*Caucalis anthriscus* Huds.)

5. OSMORRHIZA Raf.

Style and its base together 1 mm. long or shorter; plants very hairy...**1. O. claytoni.**
Style and base together 2–4 mm. long; plants nearly glabrous......**2. O. longistylis.**

1. Osmorrhiza claytoni (Michx.) Clarke.

Moist woods; common. May. Eastern N. Amer. (*O. brevistylis* DC.; *Washingtonia claytoni* Britton.)

The roots of this and the following species are edible; the flavor resembles that of anise.

2. **Osmorrhiza longistylis** (Torr.) DC. SWEET CICELY.
Moist woods; common. May. Widely distributed in N. Amer. (*Washingtonia longistylis* Britton.)

6. CHAEROPHYLLUM L. CHERVIL.

1. **Chaerophyllum procumbens** (L.) Crantz.
Moist woods or edges of marshes along the Potomac and Eastern Branch; frequent. Apr.–May. Eastern N. Amer.

Chaerophyllum bulbosum L., a tall perennial species, native of Eur., was collected in Washington in 1899 and 1902.

7. DERINGA Adans.

1. **Deringa canadensis** (L.) Kuntze. HONEWORT.
Moist woods, chiefly along Rock Creek and the upper Potomac. June–July. Eastern N. Amer. (*Cryptotaenia canadensis* DC.)

8. PASTINACA L.

1. **Pastinaca sativa** L. PARSNIP.
Waste ground; infrequent. June–July. Naturalized from Eur.

9. HERACLEUM L.

1. **Heracleum lanatum** Michx. COW PARSNIP.
Collected by Ward on High Island; probably extinct now. May–June. Widely distributed in N. Amer.

10. ANGELICA L. ANGELICA.

1. **Angelica villosa** (Walt.) B. S. P.
Dry soil; frequent. July–Aug. Eastern U. S. (*Archangelica hirsuta* Torr. & Gray.)

11. OXYPOLIS Raf.

1. **Oxypolis rigidior** (L.) Raf. COWBANE.
Swamps, northeastward. Aug.–Sept. Eastern U. S. (*Archemora rigida* DC.)

12. THASPIUM Nutt. MEADOW PARSNIP.

1. **Thaspium barbinode** (Michx.) Nutt.
Woods; frequent westward. May–June. Eastern U. S.

13. TAENIDIA Drude.

1. **Taenidia integerrima** (L.) Drude. YELLOW PIMPERNEL.
Rocky woods along Rock Creek and the upper Potomac. May–June. Eastern N. Amer. (*Pimpinella integerrima* A. Gray.)

14. ZIZIA Koch. MEADOW PARSNIP.

Basal leaves, simple, heart-shaped; stems finely pubescent..............**1. Z. cordata.**
Basal leaves compound, with several leaflets; stems glabrous..............**2. Z. aurea.**

1. **Zizia cordata** (Walt.) DC.
Dry or moist woods; frequent. Apr.–May. Eastern U. S., westward to Oreg. (*Thaspium trifoliatum* of Ward's Flora.)

2. **Zizia aurea** (L.) Koch.
Woods along the upper Potomac. Apr.–May. Eastern N. Amer. (*Thaspium aureum* Nutt.)

15. HYDROCOTYLE L. Marsh pennywort.

Leaves peltate (the petiole attached at the middle of the blade, not at the base). 1. **H. americana.**

Leaves not peltate.

Flowers pediceled.......................................2. **H. ranunculoides.**

Flowers sessile...3. **H. rotundifolia.**

1. **Hydrocotyle americana** L.

In pools and along streams; frequent. July–Aug. Eastern N. Amer.

2. **Hydrocotyle ranunculoides** L. f.

Edges of streams and pools; frequent. May–July. Widely distributed in N. and S. Amer.; also in the Old World.

3. **Hydrocotyle rotundifolia** Roxb.

Well established in the Smithsonian grounds. Summer. Native of Asia.

16. ERIGENIA Nutt.

1. **Erigenia bulbosa** (Michx.) Nutt. Harbinger of spring.

Along the upper Potomac, chiefly on the islands; rare. Apr. Eastern U. S.

17. CONIUM L.

1. **Conium maculatum** L. Poison hemlock.

Collected several times about Washington; doubtfully established. June–July. Native of Eur.; widely naturalized in N. Amer.

The roots are very poisonous.

18. SIUM L.

1. **Sium laeve** Walt. Hemlock water parsnip.

About pools, Great Falls and Eastern Branch; rare. Sept. Widely distributed in N. Amer. (*S. cicutaefolium* Gmel.)

19. PTILIMNIUM Raf.

1. **Ptilimnium capillaceum** (Michx.) Raf. Mock bishop-weed.

Wet soil, Custis Spring (*Ward*); not collected recently. Eastern U. S. (*Discopleura capillacea* DC.)

20. CICUTA L.

Leaflets lanceolate or lance-oblong; bulblets none......................1. **C. maculata.**

Leaflets linear; bulblets present in the axils of the leaves.............2. **C. bulbifera.**

1. **Cicuta maculata** L. Water hemlock.

Swamps and low ground; common. June–Aug. Eastern N. Amer.

The roots are very poisonous.

2. **Cicuta bulbifera** L.

Reported by Ward from the "Alexandria Canal, opposite the Arlington estate," and by Holm from Great Falls. Northern N. Amer., south to Va.

116. CORNACEAE. Dogwood Family.

Flowers of two kinds, pistillate and staminate, greenish, the parts in 5's, the petals minute or none; leaves alternate; trees..............................1. **NYSSA.**

Flowers all perfect, the parts in 4's, the petals white and showy, or the flowers in heads surrounded by large white petal-like bracts; leaves opposite, except in one shrubby species; trees or shrubs......................................2. **CORNUS.**

1. NYSSA L.

1. Nyssa sylvatica Marsh. BLACK GUM.

Rich soil, usually along streams or swamps, but sometimes on hillsides or in dry fields; abundant. May. Eastern U. S. (*N. multiflora* Wang.)

The plants sometimes flower when only shrubs. Leaves bright crimson in autumn; fruit nearly black, juicy, with a single ridged stone. The leaves are usually entire, but on young trees are sometimes toothed.

2. CORNUS L. DOGWOOD.

Flowers in dense heads, surrounded by large white petal-like bracts; trees; fruit red. **1. C. florida.**
Flowers in cymes, without petal-like bracts; shrubs; fruit blue or white.
  Leaves alternate. Fruit blue .... **2. C. alternifolia.**
  Leaves opposite.
    Leaves downy-hairy beneath, with white or rusty brown hairs. Fruit blue.
      Leaves broadly oval or rounded, ovate, white-hairy beneath. ...... **3. C. rugosa.**
      Leaves ovate or ovate-oblong, with mostly rusty brown hairs beneath. **4. C. amomum.**
    Leaves glabrous beneath, or with closely appressed white hairs.
      Branches purple; leaves short-pointed; cymes dense, flat.... **5. C. stolonifera.**
      Branches gray; leaves taper-pointed; cymes loosely flowered, convex. **6. C. femina.**

1. Cornus florida L. FLOWERING DOGWOOD.

Woods or dry hillsides; abundant. Apr.–May. Eastern U. S. (*Cynoxylum floridum* Raf.)

The large white bracts are often mistaken for petals. A form with pink bracts is frequent in cultivation. A flowering branch is shown in plate 35.

2. Cornus alternifolia L. f. BLUE DOGWOOD.

Above the Aqueduct Bridge, May, 1877 (*Ward*). Eastern N. Amer.

3. Cornus rugosa Lam.

Dodge's Mill, 1883 (*W. P. Conant*). Eastern N. Amer. (*C. circinata* L'Hér.)

4. Cornus amomum Mill.

Low woods and along streams; common. May–June. Eastern N. Amer. (*C. sericea* L.; *C. stolonifera* of Ward's Flora, in part.)

5. Cornus stolonifera Michx.

Low ground along the upper Potomac; infrequent. Widely distributed in N. Amer.

6. Cornus femina Mill.

Swamp near Hyattsville, May, 1910 (*McAtee*). May–June. Eastern U. S. (*C. paniculata* L'Hér.)

117. CLETHRACEAE. Sweet alder Family.

1. CLETHRA L.

1. Clethra alnifolia L. SWEET ALDER.

Swamps in the Coastal Plain; infrequent; Hollywood Swamp; Powder Mill swamps. July–Aug. Coastal Plain from Me. to Fla.

118. PYROLACEAE. Shinleaf Family.

Flowers in an umbel; leaves sharply serrate .... **1. CHIMAPHILA**
Flowers in a raceme; leaves entire or obscurely crenate .... **2. PYROLA**

1. CHIMAPHILA Pursh.

Leaves variegated with white or light green along the veins, broadest near the base. 1. **C. maculata.**

Leaves not variegated, broadest above the middle..................2. **C. umbellata.**

1. **Chimaphila maculata** (L.) Pursh. SPOTTED PIPSISSEWA.
Dry sterile woods; frequent on the Coastal Plain. June–July. Eastern U. S.

2. **Chimaphila umbellata** (L.) Nutt. PIPSISSEWA.
Dry sterile woods; frequent on the Coastal Plain. July. Eastern N. Amer.; Eur. The American form has been distinguished as *C. umbellata cisatlantica* Blake.

2. PYROLA L. SHINLEAF.

Style straight; flowers all turned to one side,..........................1. **P. secunda.**

Style strongly bent downward at base and then curved upward; flowers distributed around the main axis.

- Leaves nearly circular, mostly not over 3 cm. long, shorter than the slender petiole; calyx lobes ovate, about 2 mm. long..........................2. **P. chlorantha.**
- Leaves mostly 4–6 cm. long; calyx lobes ovate or oblong.
  - Leaves orbicular, thick; calyx lobes oblong, 3 mm. long.......3. **P. americana.**
  - Leaves elliptic, thin; calyx lobes triangular-acute, scarcely 2 mm. long. 4. **P. elliptica.**

1. **Pyrola secunda** L.
Rich woods; above the fall line; infrequent. June. Northern N. Amer., south to Va.

2. **Pyrola chlorantha** Swartz.
Dry pine woods; infrequent. June. Northern N. Amer., south to Va.

3. **Pyrola americana** Sweet.
Moist or sandy woods; frequent. June. Eastern N. Amer. (*P. rotundifolia* of Ward's Flora.)

4. **Pyrola elliptica** Nutt.
Dry woods; infrequent; the only specimens seen collected by Ward on the Carroll Estate (Rock Creek Park). June. Northern states, south to Va.

119. MONOTROPACEAE. Indian pipe Family.

Petals united..1. **MONOTROPSIS.**

Petals separate.

- Plants 1-flowered, glabrous, usually waxy white (black in drying). 2. **MONOTROPA.**
- Plants several-flowered, pubescent, tawny or pinkish...............3. **HYPOPITYS.**

1. MONOTROPSIS Schwein.

1. **Monotropsis odorata** Ell. SWEET PINESAP.
Rich woods; rare; Conway station, near Woodwardville, just beyond our limits (*Waite*, April 21, 1912). Md. to N. C.
The flowers are fragrant.

2. MONOTROPA L.

1. **Monotropa uniflora** L. INDIAN PIPE.
Rich woods; frequent. June–Sept. Widely distributed in N. Amer.; also in Asia. The flowers are drooping, but the fruit is erect. The plants are rarely pink.

3. HYPOPITYS Adans.

1. Hypopitys lanuginosa (Michx.) Raf. PINESAP.

Rich woods; infrequent. July–Sept. Eastern N. Amer. (*Monotropa hypopitys* of Ward's Flora.)

The plants are somewhat fragrant. A colony of plants in flower is shown in plate 36.

120. ERICACEAE. Heath Family.

Leaves evergreen, thick and leathery, persistent in winter.
  Plants prostrate or very low, not more than 15 cm. high; fruit fleshy, edible.
    Plants prostrate, the stems rooting; leaves entire, with a bitter taste, rough-hairy beneath; flowers borne in clusters at the ends of the branches; fruit green, splitting open and exposing the white pulp .... **1. EPIGAEA.**
    Plants with shallow rootstocks, sending up stems 6–10 cm. high; leaves with a few bristle-tipped teeth, with aromatic taste, glabrous beneath; flowers solitary in the leaf axils; fruit red, not opening .... **2. GAULTHERIA.**
  Plants erect, 20 cm. high or more; fruit dry, inedible.
    Larger leaves 3–10 cm. long or smaller; winter flowering buds in branched clusters in the axils of the upper leaves; corolla with 10 small pockets about half way from the base, these holding the 10 stamens bent back by the anthers; style straight, the flower not one-sided; pods broader than long. . **3. KALMIA.**
    Larger leaves 12–15 cm. long; winter flowering buds solitary at the ends of the branches; corolla without pockets, the stamens not sprung back; style curved, the flower one-sided; pods longer than broad. **4. RHODODENDRON.**
Leaves deciduous in winter, thin, not leathery.
  Flower clusters from solid winter buds 5 mm. or more in diameter borne at the ends of the branches; corolla 2.5–4 cm. long, with slender tube and widely spreading lobes; stamens and style conspicuously protruding; pods at maturity 3–5 times as long as broad .... **5. AZALEA.**
  Flower clusters from solid winter buds much less than 5 mm. in diameter and borne along the sides of the branches, or from racemes expanded in autumn and remaining exposed over winter; corolla less than 1.5 cm. long, narrowest at the mouth; stamens never protruding; pods less than twice as long as broad.
    Corolla about 3 mm. long, about as broad as long, covered with short appressed hairs; leaves with appressed hairs on both surfaces; pods with short appressed hairs .... **6. XOLISMA.**
    Corolla 6–10 mm. long, much longer than broad, glabrous or slightly glandular; leaves with hairs (if present) not appressed; pods glabrous.
      Leaves entire; flowers in short clusters from solid winter buds; filaments with an S-shaped bend near the middle, hairy, the anthers without bristles; pod longer than broad, narrowed toward the apex .... **7. NEOPIERIS.**
      Leaves minutely serrate; flowers in long one-sided racemes formed in autumn and remaining exposed over winter; filaments straight, glabrous, each anther tipped with 4 bristles; pod broader than long, depressed at the apex. **8. EUBOTRYS.**

1. EPIGAEA L.

1. Epigaea repens L. TRAILING ARBUTUS.

Dry or moist banks and woods. March–Apr.; fr. June. Eastern N. Amer.

A flowering plant is shown in plate 37B.

2. GAULTHERIA L.

1. Gaultheria procumbens L. WINTERGREEN.

Moist banks or woods; widely scattered but rare. June–July; fr. in autumn, persisting through winter. Eastern N. Amer.

Also known as checkerberry.

3. KALMIA L.

Leaves commonly 2–3.5 cm. wide, usually acute, alternate but clustered near the ends of the young twigs; corolla 1.5–2.5 cm. broad, white or pink; ripe pods 5–7 mm. thick, on erect pedicels..1. **K. latifolia.**

Leaves less than 1.8 cm. wide, usually obtuse, in whorls of 3; corolla 7–12 mm. broad, magenta-pink; pods 2–4 mm. thick, on recurved pedicels.....2. **K. angustifolia.**

1. **Kalmia latifolia** L. MOUNTAIN LAUREL.

Woods; common. May–June. Eastern N. Amer.

A laurel thicket is shown in plate 38; the flowers are shown in plate 39.

2. **Kalmia angustifolia** L. SHEEP LAUREL.

Swamps, northeastward; infrequent. May–June. Eastern N. Amer.

4. RHODODENDRON L.

1. **Rhododendron maximum** L. RHODODENDRON.

Ravines along the upper Potomac; very rare. June–July. Eastern N. Amer.

5. AZALEA L.

Flowers pink, or rarely white, opening in late April or early May, before or with the leaves; coarse hairs on the outside of the corolla tube usually without glands; leaves not glaucous beneath; scales of the winter flowering buds usually glabrous outside, the margins ciliate..1. **A. nudiflora.**

Flowers usually white, sometimes pink, opening in June or late May, after the growth of the leaves; coarse hairs on the outside of the corolla tube always gland-tipped; leaves often glaucous beneath; scales of the winter flowering buds usually with satiny white hairs outside, besides the hairs of the margins........2. **A. viscosa.**

1. **Azalea nudiflora** L. PINK AZALEA.

Dry woods and fields; common. Apr.–May. Eastern U. S. (*Rhododendron nudiflorum* Torr.)

2. **Azalea viscosa** L. SWAMP AZALEA.

Swamps, northeastward; frequent. May–June. Eastern U. S. (*Rhododendron viscosum* Torr.)

A very variable species, several forms of which have been named. In *A. viscosa glauca* (Michx.) A. Gray the leaves are glaucous beneath; in *A. viscosa nitida* (Pursh) A. Gray they are green on both sides. Both these forms occur in our region.

6. XOLISMA Raf.

1. **Xolisma ligustrina** (L.) Britton.

Swamp or woods; common. June. Eastern U. S. (*Andromeda ligustrina* Muhl.; *Lyonia ligustrina* DC.)

7. NEOPIERIS Britton.

1. **Neopieris mariana** (L.) Britton. STAGGER-BUSH.

Swamps or dry or moist woods, Rock Creek and eastward; common. May–June. Eastern U. S. (*Andromeda mariana* L.; *Lyonia mariana* D. Don.)

8. EUBOTRYS Nutt.

1. **Eubotrys racemosa** (L.) Nutt. SWEETBELLS.

Swamps and dry or moist woods; frequent. May–June. Eastern U. S. (*Leucothoe racemosa* A. Gray.)

The winter buds are crimson and conspicuous.

121. VACCINIACEAE. Blueberry Family.

Lower surface of the leaves covered with minute wax globules, these conspicuous under a lens; calyx lobes with sessile or stalked glands; seeds 10, arranged in a ring, surrounded by a bony covering at maturity............**1. GAYLUSSACIA.**

Lower surface of the leaves without wax globules; calyx lobes without glands; seeds numerous, not in a ring, lying naked in the pulp of the berry.

Stamen tips projecting from the mouth of the corolla, each anther with 2 spurlike appendages; bracts of the inflorescence green, persisting until the maturity of the fruit; pedicel not jointed............................**2. POLYCODIUM.**

Stamens included within the corolla, the anthers not appendaged; bracts deciduous after flowering; pedicel jointed to the base of the flower......**3. VACCINIUM.**

1. GAYLUSSACIA H. B. K. HUCKLEBERRY.

Leaves somewhat glaucous beneath, without wax globules on the upper surface; young twigs glabrous; corolla 3–4 mm. long; filaments glabrous; berry light blue, with a dense bloom, usually much shorter than the pedicel.......**1. G. frondosa.**

Leaves green, with wax globules or stalked glands on both surfaces; young twigs pubescent; corolla 5–7 mm. long; filaments hairy; berry black and shining, or blue with a usually thin bloom, commonly equaling or longer than the pedicel.

Bracts about half as long as the pedicels, deciduous after flowering; ovary, and usually the bracts and pedicels, with sessile wax globules; corolla red, about 5 mm. long, 2–3 times as long as broad; berry glabrous...........**2. G. baccata.**

Bracts equaling or longer than the pedicels, persistent in fruit; ovary, bracts, and pedicels with stalked glands; corolla white, about 7 mm. long, 1–1.5 times as long as broad; berry hairy...................................**3. G. dumosa.**

1. Gaylussacia frondosa (L.) Torr. & Gray. DANGLEBERRY.

Swamps or dry or moist woods, chiefly eastward; common. May; fr. July. Eastern U. S.

2. Gaylussacia baccata (Wang.) K. Koch. BLACK HUCKLEBERRY.

Dry or moist woods or hillsides; common. May; fr. June–July. Eastern N. Amer. *G. resinosa* Torr. & Gray.)

3. Gaylussacia dumosa (Andr.) Torr. & Gray. DWARF HUCKLEBERRY.

Swamps and low woods, northeastward; infrequent. May–June; fr. July–Aug. Eastern N. Amer. (*G. dumosa hirtella* A. Gray.)

2. POLYCODIUM Raf.

1. Polycodium stamineum (L.) Greene. DEERBERRY.

Dry or moist woods; common. May–June; fr. July–Sept. Eastern U. S. (*Vaccinium stamineum* L.)

Sometimes known as hog huckleberry. A flowering branch is shown in plate 40.

3. VACCINIUM L. BLUEBERRY.

Plants usually 25–60 cm. high, forming patches by means of rootstocks; bark remaining green and smooth for several years; leaves usually minutely serrate and hairy on the margins, 2.5–4 cm. long; corolla little or not at all narrowed at the mouth when fully expanded...**1. V. vacillans.**

Plants erect shrubs, commonly 1–2 meters high; bark early splitting and turning brown; leaves usually entire and 4–7 cm. long; corolla distinctly narrowed at the mouth, even when fully expanded.

Flower (from base of ovary to end of corolla) 5–7 mm. long.

Fruit black; leaves pubescent beneath......................**2. V. atrococcum.**

Fruit blue; leaves glabrous beneath.........................**3. V. caesariense.**

Flower 8–10 mm. long. Leaves glabrous and glaucous beneath; berry blue.
4. V. corymbosum.

1. Vaccinium vacillans Kalm. DRYLAND BLUEBERRY.
Dry fields and woods; common. Apr.–May; fr. July. Eastern U. S.

2. Vaccinium atrococcum (A. Gray) Heller. EARLY HIGHBUSH BLUEBERRY.
Swamps and low sandy woods; frequent. Apr.–May; fr. July. Eastern N. Amer. (*V. corymbosum* of Ward's Flora.)

3. Vaccinium caesariense Mackenzie.
Swamps and sandy woods of the Coastal Plain. Apr.–May; fr. July. N. J. to Va.

4. Vaccinium corymbosum L. HIGHBUSH BLUEBERRY.
Swamps or ravines; Paint Branch Swamp and near TB; rare. May; fr. July–Aug. Eastern N. Amer.

122. PRIMULACEAE. Primrose Family.

Leaves all basal, the flowers showy, purple or pink, in umbels, on an erect simple naked scape; corolla lobes strongly reflexed. Plants perennial.
6. DODECATHEON.

Leaves borne chiefly on the flowering stems and branches; corolla lobes erect or spreading.

  Ovary partly inferior, obviously united with the calyx tube at maturity, only the lobes of the calyx free; corolla white. Plants perennial, low and weak; leaves alternate..**1. SAMOLUS.**

  Ovary distinctly superior, not united with the calyx; corolla pink, scarlet, blue, or yellow (rarely white in *Anagallis*.)

    Plants low annuals; flowers axillary; capsules circumscissile, the top falling off as a circular lid.

      Leaves opposite, dark-dotted beneath; flowers on pedicels 1–3 cm. long; corolla longer than the calyx; stamens with bearded filaments.
4. ANAGALLIS.

      Leaves alternate, not dotted; flowers sessile or nearly so; corolla shorter than the calyx; filaments beardless.....................**5. CENTUNCULUS.**

    Plants perennial; flowers axillary or not; capsules 2–5-valved. Leaves opposite or whorled.

      Leaves dotted; staminodia (sterile stamens) wanting; filaments united at the base...**2. LYSIMACHIA.**

      Leaves not dotted; staminodia 5, alternate with the stamens; filaments distinct or nearly so.................................**3. STEIRONEMA.**

1. SAMOLUS L. BROOKWEED.

1. Samolus floribundus H. B. K.
Moist, mostly alluvial situations; not uncommon along the Canal and the Potomac from Georgetown to Great Falls. July. Widely distributed in N. Amer. (*S. valerandi americanus* A. Gray.)

2. LYSIMACHIA L. LOOSESTRIFE.

Stems creeping, commonly rooting at the nodes; leaves roundish..**1. L. nummularia.**

Stems erect or ascending; leaves lanceolate to oval or ovate.

  Flowers axillary, on long filiform pedicels; stems simple, the leaves mostly in whorls of 4 or 5 (sometimes 3–7).................................**2. L. quadrifolia.**

  Flowers borne in a long terminal small-bracted raceme; stems usually branched, the leaves opposite or rarely alternate................................**3. L. terrestris.**

1. Lysimachia nummularia L. MONEYWORT.

Moist places, chiefly in alluvial soil; well established at several localities. May–June. Naturalized from Eur. in the northeastern U. S.

2. Lysimachia quadrifolia L. CROSSWORT.

Moist or dry open woods, or low meadows or thickets; common. May–June. Eastern N. Amer.

3. Lysimachia terrestris (L.) B. S. P.

Low moist or marshy situations; not uncommon, especially along the Potomac. June–July. Eastern N. Amer. (*L. stricta* Ait.)

Lysimachia producta (A. Gray) Fernald, a supposed fertile hybrid of the two last pecies, is intermediate in characters. It is known locally from two collections.

3. STEIRONEMA Raf. LOOSESTRIFE.

Stem leaves narrowly linear, stiff, prominently 1-nerved, the lateral veins obscure. **1. S. quadriflorum.**

Stem leaves narrowly lanceolate to ovate or oblong, thin, pinnately veined.

  Upper leaves with broadly lanceolate to ovate blades; petioles long, copiously long-ciliate throughout..**2. S. ciliatum.**

  Upper leaves with narrowly lanceolate to oblong blades; petioles often not sharply separated from the blades.

    Basal leaves and lower stem leaves mostly persistent, the blades round to oblong or oval; stem usually simple; petioles ciliate throughout, the hairs extending along the basal part of the blade; pedicels mostly shorter than the leaves. **3. S. hybridum.**

    Basal leaves and lower stem leaves reduced or rarely persistent; stem commonly branched; petioles ciliate chiefly at or near the base; pedicels usually longer than the leaves..**4. S. lanceolatum.**

1. Steironema quadriflorum (Sims) Hitchc.

Moist open places; two or three stations on the Potomac Flats near Chain Bridge; apparently rare. June–Aug. Northeastern U. S. (*S. longifolium* A. Gray.)

2. Steironema ciliatum (L.) Raf. FRINGED LOOSESTRIFE.

Low moist thickets, chiefly along the Potomac; common. June–July. Widely distributed in N. Amer.

3. Steironema hybridum (Michx.) Raf.

Around pools; locally common at Great Falls (both sides of the River) and above Sandy Landing, but not found elsewhere. June–July. Eastern U. S., west to Ariz. (*S. ciliatum hybridum* A. Gray.)

Closely related to *S. lanceolatum* but, on the basis of local specimens, distinct.

4. Steironema lanceolatum (Walt.) A. Gray.

Low or marshy situations; half a dozen localities, mostly along the lower Potomac; apparently not uncommon. June–Aug. Eastern U. S.

4. ANAGALLIS L. PIMPERNEL.

1. Anagallis arvensis L. POOR MAN'S WEATHER-GLASS.

Pastures and waste places; several scattered localities. July–Sept. N. Amer. generally; naturalized from Eur.

5. CENTUNCULUS L.

1. Centunculus minimus L. CHAFFWEED.

Moist soil; uncommon; Woodlawn, and region of Hyattsville and Bladensburg. June. Eastern U. S. and westward.

6. DODECATHEON L.

1. **Dodecatheon meadia** L. SHOOTING STAR.
Moist situations, usually in rich open woods; several localities, Corcoran's Woods, Glen Echo, Chevy Chase, and near Dead Run. May. Eastern U. S.

123. DIOSPYRACEAE. Ebony Family.

1. DIOSPYROS L.

1. **Diospyros virginiana** L. PERSIMMON.
Old fields. May; fr. Oct. Eastern U. S.

124. OLEACEAE. Olive Family.

The commonly cultivated species are the lilac (*Syringa vulgaris* L.); the golden bell (*Forsythia suspensa* Vahl), a shrub with simple leaves, the yellow 4-parted flowers appearing before the leaves in early spring; and the jasmine or jessamine. The white jasmine, *Jasminum officinale* L., has pinnate leaves, and white flowers in summer. The yellow jasmine, *J. nudiflorum* Lindl., has trifoliolate leaves and scattered yellow flowers appearing before the leaves in early spring, the branches drooping or reclining.

Leaves compound, unequally pinnate; flowers green; fruit linear or oblong, dry, winged........1. **FRAXINUS.**
Leaves simple; flowers white; fruit fleshy.
  Leaves lanceolate or oblong, 2–5 cm. long; corolla small, 4-lobed; fruit a 3-sided 1–3-seeded berry........2. **LIGUSTRUM.**
  Leaves oblong, oval, or obovate, 7–14 cm. long; corolla cleft to the base into 4 linear lobes 2.5 cm. long; fruit a 1–3-seeded drupe........3. **CHIONANTHUS.**

1. FRAXINUS L. ASH.

Lateral leaflets sessile. Leaflets 3–5 pairs, ovate to oblong-lanceolate, sharply serrate, 5–10 cm. long or more, green on both sides; fruit 2.5–4 cm. long, winged all around or nearly so........1. **F. nigra.**
Lateral leaflets stalked.
  Branchlets and petioles glabrous. Fruit 2.5–5 cm. long, terete below.
    Leaflets pale beneath, ovate-lanceolate or oblong-lanceolate, glabrous or pubescent, entire or serrate; wing of the fruit 2–3 times the length of the body, commonly pointed........2. **F. americana.**
    Leaflets green beneath, oblong-lanceolate, commonly glabrous beneath, often wedge-shaped at the base, serrate; wing of the fruit rarely over twice as long as the body, truncate or emarginate........4a. **F. pennsylvanica lanceolata.**
  Branchlets and petioles pubescent or tomentose.
    Leaflets pale and pubescent beneath, 7–9, lanceolate, acuminate, commonly entire; fruit 4–6 cm. long, the wing terminal, 2–4 times as long as the body.
3. **F. biltmoreana.**
    Leaflets green beneath, 5–9, ovate or oblong-lanceolate, entire or serrulate; fruit 4–5 cm. long, the wing decurrent on the terete body, rarely twice as long as the latter........4. **F. pennsylvanica.**

1. **Fraxinus nigra** Marsh. BLACK ASH.
Swamps and along creeks. Apr.–May. Northern states, south to Va.

2. **Fraxinus americana** L. WHITE ASH.
Moist woods. Apr.–May. Eastern U. S.

3. **Fraxinus biltmoreana** Beadle. BILTMORE ASH.
Low places and along streams. Apr.–May. Pa. to Ga. (Included in *F. pubescens* by Ward.)

4. **Fraxinus pennsylvanica** Marsh. RED ASH.
Moist woods. Apr.–May. Eastern U. S. (*F. pubescens* Lam.)

4a. **Fraxinus pennsylvanica lanceolata** (Borckh.) Sarg. GREEN ASH.
Swamps and along streams. May. Eastern U. S. (*F. viridis* Michx. f.)

2. LIGUSTRUM L.

1. **Ligustrum vulgare** L. PRIVET.
Used for hedges; rarely escaped from cultivation. June. Eur. and Asia.

3. CHIONANTHUS L.

1. **Chionanthus virginica** L. FRINGETREE.
Swamps, low woods, and along streams, sometimes on rocky hillsides. May; fr. Aug. Southern states, north to N. J.

125. LOGANIACEAE. Logania Family.

Corolla red outside, yellow within, 2.5–5 cm. long; leaves ovate.......**1. SPIGELIA.**
Corolla white, about 2 mm. long; leaves linear....................**2. POLYPREMUM.**

1. SPIGELIA L.

1. **Spigelia marylandica** L. INDIAN PINK
Reported by Holm as collected in a moist thicket in the vicinity of Mount Vernon. Va. to Tex.

2. POLYPREMUM L.

1. **Polypremum procumbens** L.
Kenilworth, August, 1898 (*Steele*); reported by Holm from Marshall Hall. Southeastern U. S. to Mex., and W. Ind.
Probably adventive in the District.

126. GENTIANACEAE. Gentian Family

Leaves all reduced to small scales; corolla 3–4 mm. long, yellowish white. Flowers on long slender pedicels..................................**1. BARTONIA.**
Leaves, at least part of them, normal, with broad blades; corolla 1 cm. long or longer.
  Lower leaves reduced to scales, the upper ones broadly wedge-shaped; plants 15 cm. high or smaller, perennial, flowering in the spring; corolla about 1 cm. long, white or tinged with purple, the tube about as long as the lobes. **2. OBOLARIA.**
  Lower leaves similar to the upper ones, not reduced, the upper ones never wedge-shaped; plants usually 20 cm. high or often much larger, flowering in summer or autumn; corolla or its lobes distinctly over 1 cm. long.
    Corolla lobes several times longer than the very short tube, spreading, normally pink; flowers on long pedicels; plants annual...............**3. SABBATIA.**
    Corolla lobes much shorter than the tube, erect or nearly so, greenish white, blue, or purple; flowers sessile or nearly so; plants perennial..**4. GENTIANA.**

1. BARTONIA Muhl.

Corolla lobes very obtuse, sometimes abruptly short-pointed, finely toothed; calyx lobes nearly as long as the corolla; branches erect...............**1. B. virginica.**
Corolla lobes acute, entire; calyx lobes half as long as the corolla; branches ascending. **2. B. paniculata.**

1. **Bartonia virginica** (L.) B. S. P.
Sphagnum bogs; rare; known definitely from the Terra Cotta and Paint Branch swamps and the vicinity of the Reform School. July–Aug. Eastern N. Amer. (*B. tenella* Muhl.)

2. **Bartonia paniculata** (Michx.) Robinson.
Sphagnum bogs; rare or probably overlooked. Aug.–Sept. Eastern U. S.

2. OBOLARIA L.

1. **Obolaria virginica** L. PENNYWORT.
Woods; frequent. March–June. Eastern U. S.

3. SABBATIA Adans. ROSE-GENTIAN.

Corolla 8–12-lobed........1. **S. dodecandra.**
Corolla 5-lobed.
Branches opposite, sharply angled; leaves broadly ovate, clasping at the base; calyx lobes shorter than the corolla........2. **S. angularis.**
Branches alternate, nearly terete; leaves linear or linear-lanceolate, narrowed at the base; calyx lobes equaling or longer than the corolla...3. **S. campanulata.**

1. **Sabbatia dodecandra** (L.) B. S. P.
Along the Potomac below Alexandria (*Titus Ulke*). Eastern U. S.

2. **Sabbatia angularis** (L.) Pursh.
Dry or moist fields. July–Sept. Eastern N. Amer.
Plants with white corollas are sometimes found.

3. **Sabbatia campanulata** (L.) Torr.
Low meadow near Falls Church, July, 1888 (*C. Knisley*). Eastern U. S. (*S. gracilis* Salisb.)

4. GENTIANA L. GENTIAN.

Corolla greenish white, striped with purple; lower leaves obovate, rounded at the apex; margins of the calyx lobes and leaves glabrous or nearly so........1. **G. villosa.**
Corolla blue; leaves mostly lanceolate and broadest below the middle, usually very acute; margins of the calyx lobes and leaves finely hairy.
Corolla rather deeply lobed, the lobes equaling or longer than the toothed plaits between them........2. **G. saponaria.**
Corolla very shallowly lobed, the lobes small, often shorter than the plaits.
3. **G. andrewsii.**

1. **Gentiana villosa** L. STRIPED GENTIAN.
Woods or thickets; frequent. Aug.–Oct. Eastern U. S. (*G. ochroleuca* Froel.; *Dasystephana villosa* Small.)

2. **Gentiana saponaria** L. BOTTLE GENTIAN.
Low woods and thickets; frequent. Sept.–Oct. Eastern N. Amer. (*Dasystephana saponaria* Small.)

3. **Gentiana andrewsii** Griseb. CLOSED GENTIAN.
Low woods or thickets; rare. Sept.–Oct. Northeastern N. Amer. (*Dasystephana andrewsii* Small.)
This and the preceding species intergrade, and the two are doubtfully distinct.

Nymphoides peltatum (Gmel.) Britten & Rendle (*N. nymphaeoides* Britton), floating heart (of the allied family Menyanthaceae), was formerly well established in the fish ponds, Potomac Park; the ponds have been filled, however, and the station destroyed. Native of Eur. and Asia.

127. APOCYNACEAE. Dogbane Family.

Plants erect; leaves not evergreen; flowers in branched cymes; corolla 8 mm. long or smaller white, greenish white, or pink........1. **APOCYNUM.**
Plants creeping; leaves evergreen; flowers solitary in the axils of the leaves, on long slender pedicels; corolla about 2 cm. long, blue........2. **VINCA.**

1. APOCYNUM L. Dogbane.

The representatives of this genus in our region have been treated at length by G. S. Miller.[1] His conclusions as to specific limits and the use of specific names are, however, widely different from those of the present treatment. Besides the species recognized below, Miller also reports *Apocynum androsaemifolium* L. as collected between Sligo Branch and Paint Branch. The writer has seen no specimens of that species, which is distinguished from our others by its large pink corolla about 8 mm. long.

Leaves perfectly glabrous beneath. Branches opposite; corolla greenish white, the lobes erect.
  Leaves short-petioled, narrowly lance-oblong, very acute, usually less than 2 cm. wide, often acute at the base; corolla nearly white.......... **1. A. cannabinum.**
  Leaves, at least the lower ones, sessile, broadly oblong or ovate, usually 3 cm. wide or larger, rounded at the base; corolla greenish................ **2. A. sibiricum.**
Leaves more or less hairy beneath.
  Corolla greenish, the lobes erect; main stem ending abruptly in a cyme of flowers, the lateral branches continued above; leaves usually densely hairy beneath. **3. A. pubescens.**
  Corolla white or pinkish, the lobes slightly spreading; branching dichotomous, that is, the stems forking; leaves densely or only slightly hairy beneath.
    Cymes small, rounded; corolla 4–6 mm. long; branches, at least the upper ones, reddish.. **4. A. medium.**
    Cymes broad, flat-topped; corolla 7 mm. long; branches usually green, ascending. **5. A. speciosum.**

1. Apocynum cannabinum L. Indian hemp.

Low ground or in marshes, chiefly along the Potomac; common. May–Aug. Widely distributed in N. Amer. (*A. album* Greene.)

A. album was described from plants found along the Potomac. The bark of *A. cannabinum* contains a strong fiber, which was used by the Indians for various purposes.

2. Apocynum sibiricum Jacq.

Low woods and fields; frequent. May–Aug. Widely distributed in N. Amer. *A. hypericifolium* Ait.)

3. Apocynum pubescens R. Br.

Open woods, thickets, and fields; abundant. June–Sept. Eastern N. Amer. (*A. cannabinum* of Miller, not of Linnaeus; *A. cannabinum pubescens* DC.; *A. cannabinum puberulum* Bég. & Bel.; *A. nemorale* Miller; *A. cannabinum nemorale* Fernald.)

The type of *A. nemorale* was collected at the Virginia end of the Chain Bridge.

. Apocynum medium Greene.

Dry fields; frequent. June–Aug. Northeastern N. Amer. (*A. urceolifer* Miller; *A. milleri* Britton; *A. pseudomedium* Bég. & Bel.)

The type of *A. urceolifer* was collected at Capital View Park; that of *A. milleri* also is from our region.

5. pocynum speciosum Miller.

Fields and roadsides; frequent. June–July. Range not definitely known.

The type was collected between Silver Spring and Sligo Branch.

2. VINCA L.

1. Vinca minor L. Periwinkle.

Roadsides and woods; frequent. Apr. Native of Eur., often cultivated; frequently escaping and becoming naturalized.

Known also as myrtle. White-flowered plants are sometimes found.

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[1] Proc. Biol. Soc. Washington **13**: 79–90. *pl. 2.* 1899.

128. ASCLEPIADACEAE. Milkweed Family.

Plants with twining stems, the leaves heart-shaped, long-petioled.
  Corolla lobes spreading, reddish brown or greenish; crown a continuous ring or cup the 5 fleshy divisions more or less fused together; pod smooth and wing angled or roughened with warty projections...............**1. VINCETOXICUM.**
  Corolla lobes erect, white; crown of 5 thin flat awned processes; pod smooth, not strongly angled...**2. GONOLOBUS.**
Plants erect or decumbent, never with twining stems, the leaves sessile or short-petioled.
  Leaves mainly alternate; hoods of the crown without horns or other included outgrowths; pod smooth.......................................**3. ACERATES.**
  Leaves mainly opposite or whorled; crown of 5 hoods, each covering a distinct curved horn-shaped outgrowth; pod smooth or warty..........**4. ASCLEPIAS.**

1. VINCETOXICUM Walt.

Crown a low wavy ring; pods smooth, angled; seeds very dark brown.
1. V. suberosum.
Crown cup-shaped; pods warty, not angled; seeds reddish brown.
  Buds conical; corolla lobes linear to strap-shaped, about 15 mm. long; racemes several to many-flowered.................................**2. V. obliquum.**
  Buds elongate-ovoid; corolla lobes elliptic to linear-oblong, about 10 mm. long; racemes few-flowered..**3. V. carolinense.**

1. Vincetoxicum suberosum (L.) Britton. ANGLE-POD.

Open thickets along the Potomac near Fort Washington (*C. P. Smith*). July; fr. Nov. Va. to Fla. (*Gonolobus suberosus* R. Br.)

This is the only species of this region to which the name "angle-pod" is really applicable. The seeds are much darker brown than in any other milkweed of our region.

2. Vincetoxicum obliquum (Jacq.) Britton.

Frequent in thickets near the Potomac. June; fr. Oct.–Nov. Southeastern U. S. (*Gonolobus obliquus* R. Br.)

The seeds are the shade of reddish brown common to most milkweeds of this region.

3. Vincetoxicum carolinense (Jacq.) Britton.

Occasional in thickets south and east of Congress Heights and Alexandria. June–July. Southeastern U. S. (*Gonolobus carolinensis* R. Br.; *G. hirsutus* of Ward's Flora.)

Pods and seeds indistinguishable from those of *V. obliquum*.

2. GONOLOBUS Michx.

1. Gonolobus laevis Michx. SAND VINE.

Low thickets along the Potomac; common. July–Aug. Southern U. S. (*Enslenia albida* Nutt.; *Ampelanus albidus* Britton.)

3. ACERATES Ell.

1. Acerates viridiflora (Raf.) Eaton. GREEN-FLOWERED MILKWEED.

Common, though inconspicuous, in the drier open country of our region. July; fr. Oct.–Nov. Eastern U. S.

4. ASCLEPIAS L. MILKWEED.

Leaves whorled, at least at one of the nodes.
  Leaves linear; pods 6–8 cm. long, about 5 mm. thick. Corolla greenish white.
1. A. verticillata.

Leaves broad, not linear; pods 8–12 cm. long, 10–20 mm. thick.
  Leaves thin, ovate or ovate-lanceolate, taper-pointed; corolla lobes pink, the hoods white..**2. A. quadrifolia.**
  Leaves rather stiff, oval, ovate, or obovate; corolla lobes white, the hoods purplish. **9. A. variegata.**
Leaves scattered or opposite.
 Leaves scattered; juice not milky. Corolla pale or dark orange; plants hairy. **4. A. tuberosa.**
 Leaves mainly opposite; juice milky.
  Leaves heart-shaped, clasping, glabrous, wavy-margined. Corolla greenish purple or decidedly purplish..........................**5. A. amplexicaulis.**
  Leaves sessile or short-petioled, not clasping.
   Stems usually much branched above.
    Plants glabrous or nearly so; leaves seldom over 2.5 cm. wide; petioles 4–10 mm. long; corolla lobes and hoods rose-purple..........**10. A. incarnata.**
    Plants soft-hairy throughout; larger leaves commonly over 2.5 cm. wide; petioles 2–5 mm. long; corolla lobes and hoods pale pinkish. **11. A. pulchra.**
   Stems normally simple.
    Pods densely woolly, 2–3 cm. thick, usually warty with soft processes, but occasionally smooth. Leaves downy beneath; corolla whitish to dull purple, often fading greenish yellow, the hoods darker.......**6. A. syriaca.**
    Pods neither woolly nor warty, usually less than 2 cm. thick.
     Leaves downy beneath. Corolla lobes and hoods dark purple. **7. A. purpurascens.**
     Leaves glabrous beneath.
      Leaves sessile, long taper-pointed. Corolla lobes and hoods purplish red. **8. A. rubra.**
      Leaves petioled.
       Leaves taper-pointed, ovate; corolla lobes greenish purple, the hoods white or pink..............................**3. A. phytolaccoides.**
       Leaves oval, ovate, or obovate; corolla lobes white, the hoods purplish. **9. A. variegata.**

1. Asclepias verticillata L.

Rather dry open woods; occasional. July–Aug. Widely distributed in N. Amer.

2. Asclepias quadrifolia Jacq.

Rather uncommon on wooded hillsides near the Potomac, above Georgetown. May–June. Eastern N. Amer.

3. Asclepias phytolaccoides Pursh.

Woodside, June, 1896 (*H. W. Oldys*). Eastern U. S.

4. Asclepias tuberosa L. BUTTERFLY-WEED. PLEURISY-ROOT.

Frequent in dry open places. June–Aug. Widely distributed in the U. S. (*A. decumbens* L.)

Used in medicine and cultivated as an ornamental plant.

5. Asclepias amplexicaulis J. E. Smith.

Common in open sandy places, especially on the Coastal Plain. May–July; fr. Aug. Eastern U. S. (*A. obtusifolia* Michx.)

6. Asclepias syriaca L. COMMON MILKWEED.

Common in open moist ground, especially along highways and in pastures, often appearing as if an introduced weed. June–July. Eastern N. Amer. (*A. cornuti* Decaisne.)

7. Asclepias purpurascens L. PURPLE MILKWEED.

Thickets along the Potomac and Rock Creek; occasional. June. Eastern U. S.

8. Asclepias rubra L. RED MILKWEED.

Occasional in boggy places throughout our area. July. Southeastern U. S.

9. Asclepias variegata L. WHITE MILKWEED.

Occasional in open woods and thickets with much undergrowth, near streams. June–July. Eastern U. S.

10. Asclepias incarnata L. SWAMP MILKWEED.

Frequent in swamps along and near the Potomac. May–June. Eastern N. Amer.

11. Asclepias pulchra Ehrh.

Abundant throughout our area, in moist soil, fields, edges of wet thickets, and along streams. July–Aug. Eastern N. Amer. (*A. incarnata pulchra* Pers.)

Closely related to the last, but easily separated where, with us, the two grow together.

129. CONVOLVULACEAE. Morning-glory Family.

Stigma one, capitate, entire or 2 or 3-lobed; annuals or (*I. pandurata*) perennial from a fleshy root..**1. IPOMOEA.**

Stigmas 2, linear to oblong or oval; perennials with creeping roots or rootstocks. **2. CONVOLVULUS.**

1. IPOMOEA L. MORNING-GLORY.

The cultivated sweet potato and yam are forms of *Ipomoea batatas* Poir., and the very showy and sweet-scented moonflower is *I. bona-nox* L. *Ipomoea quamoclit* L., the cypress vine, with pinnate leaves, is rarely found in waste places, escaped from cultivation.

Stamens and style protruding; corolla deep red, the tube narrow. Leaves heart-shaped, entire..**1. I. coccinea.**

Stamens and style included in the funnelform corolla tube; corolla not bright red.

  Stigma entire or 2-lobed; ovary 2-celled; seeds 4; sepals lanceolate or ovate, acute or obtuse.

    Corolla tube purple within, otherwise white, not acutely lobed, much more than twice as long as the calyx; sepals obtuse, glabrous; root perennial, often large; seeds with a fringe of long brown hairs on the lateral angles. **2. I. pandurata.**

    Corolla tube white or pinkish, acutely lobed, only twice as long as the calyx; sepals acute, stiff-hairy; annual; seeds glabrous.............**3. I. lacunosa.**

  Stigma 3-lobed; ovary 3-celled; seeds 3–6; sepals long-attenuate, hairy. Annuals, with glabrous seeds.

    Leaves acuminate, entire; flowers and fruits 3–5 in a long-peduncled cluster. **4. I. purpurea.**

    Leaves acute, 3-lobed; flowers and fruits 1–3 in a short-peduncled cluster. **5. I. hederacea.**

1. Ipomoea coccinea L. SMALL RED MORNING-GLORY.

Escaped from cultivation. Aug.–Sept. Native of tropical Amer. (*Quamoclit coccinea* Moench.)

2. Ipomoea pandurata (L.) Meyer. WILD POTATO VINE.

Abundant in dry sandy and clay soils generally, trailing in the open or climbing in thickets. July–Aug. Eastern N. Amer.

The leaves of sterile plants are often 3-lobed.

3. Ipomoea lacunosa L.

Common in moist thickets along the Potomac and in fields and along roadsides at College Park. Aug.-Sept. Eastern U. S.

4. Ipomoea purpurea (L.) Roth. COMMON MORNING-GLORY.

Common in waste places and roadside thickets. Aug.–Oct. Naturalized from tropical Amer.

5. Ipomoea hederacea Jacq.

Waste places and stubble fields. Aug.–Oct. Naturalized from tropical Amer. (*I. nil* of Ward's Flora.)

2. CONVOLVULUS L. Bindweed.

Bracts of the peduncle scalelike, remote from the calyx; stigmas linear; propagating by creeping roots..**1. C. arvensis.**
Bracts of the peduncle leaflike, inclosing the calyx; stigmas oval to oblong; propagating by creeping rootstocks.
  Stems short and simple, erect or ascending; leaves oval or obovate, without lobes at the base or with very small ones..............................**2. C. spithamaeus.**
  Stems long, trailing or twining; leaves arrow-shaped, with large lobes at the base. **3. C. sepium.**

1. Convolvulus arvensis L.

Fields and waste ground, gradually becoming more common. May–Sept. Naturalized from Eurasia.

2. Convolvulus spithamaeus L.

Dry fields and woods; widely scattered but not common. May–June. Eastern N. Amer.

3. Convolvulus sepium L.

Thickets, neglected fields, and waysides; abundant. May–Oct. Widely distributed in N. Amer.

This species is variable and two or more forms may perhaps be separated. The typical form is glabrous or nearly so, with the peduncles elongate and merely 4-angled. Var. *fraterniflorus* Mack. & Bush is more or less pubescent, with shorter and wing-angled peduncles.

130. CUSCUTACEAE. Dodder Family.

1. CUSCUTA L. Dodder.

Calyx subtended by calyx-like bracts. Flowers sessile; bracts and calyx lobes minutely ciliolate; corolla tube exceeding the calyx, contracted at the throat; withering corolla capping the ovoid or oblate capsule, at length deciduous. **5. C. compacta.**
Calyx not subtended by bracts.
  Flowers sessile or nearly so. Calyx lobes ovate, at least as long as the corolla tube.
    Lobes of calyx and corolla 5 each; corolla lobes reflexed; scale[1] fringes usually exposed; withering corolla persistent about the globose capsule. **1. C. arvensis.**
    Lobes of calyx and corolla 4 or 5 each; corolla lobes not reflexed; scales not exposed; withering corolla persistent at the base of the depressed-globose capsule..**2. C. polygonorum.**
  Flowers distinctly pediceled.
    Calyx lobes 5 (rarely 4), triangular, acute; corolla tube exceeding the calyx, the lobes erect, waxy white, their tips incurved; withering corolla surrounding the depressed-globose capsule....................................**3. C. coryli.**
    Calyx lobes 5, ovate; corolla campanulate, its tube about twice the length of the calyx, its lobes spreading or reflexed; withering deciduous corolla at first surrounding the ovoid or globose capsule.......................**4. C. gronovii.**

1. Cuscuta arvensis Beyr. Field dodder.

On herbaceous plants generally within our range, the species commonly found on weeds and clover in the vacant lots about Washington. June–Sept. Common throughout the U. S.

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[1] The scales are small appendages on the inside of the corolla between the lobes.

2. Cuscuta polygonorum Engelm. SMARTWEED DODDER.

On various herbs in damp situations, particularly *Persicaria lapathifolia* and *P. pennsylvanica;* abundant on these species on the Potomac flats; has been found on red clover growing near infested *Persicaria.* June–Sept. Widely distributed in N. Amer. (*C. chlorocarpa* Engelm.)

3. Cuscuta coryli Engelm. HAZEL DODDER.

North of Glen Echo park, Oct. 16, 1904 (*Mrs. F. H. Hillman*). Eastern U. S.

4. Cuscuta gronovii Willd.

Common in moist places, often forming dense yellow areas on low wet ground. July–Aug. Widely distributed in the U. S.; occurring on many herbaceous plants and small shrubs.

5. Cuscuta compacta Juss.

Common on low shrubs in woods and along streams. July–Sept. Eastern U. S.

131. POLEMONIACEAE. Phlox Family.

Leaves alternate, pinnate....................................**1. POLEMONIUM.**
Leaves opposite or fascicled, simple, entire............................**2. PHLOX.**

1. POLEMONIUM L. JACOB'S-LADDER.

1. Polemonium reptans L.

Rich soil in ravines of the upper Potomac; Rock Creek Park; Woodside; Kensington; infrequent. Apr.–May. Eastern U. S.

2. PHLOX L.

Leaves awl-shaped, rigid, crowded; stems creeping, more or less matted, woody at base..**1. P. subulata.**
Leaves flat, opposite; stems erect or ascending, herbaceous.
  Inflorescence a many-flowered panicle; stem leaves 5–10 cm. long.
    Panicle pyramidal; leaves often 3 cm. broad; calyx lobes awn-pointed. **2. P. paniculata.**
    Panicle narrowly oblong or ellipsoid; leaves not much over 1.5 cm. broad; calyx lobes lanceolate, not awn-pointed........................**3. P. maculata.**
  Inflorescence a few-flowered cyme; leaves 3–6 cm. long.
    Upper leaves lance-ovate or oblong-lanceolate; stems decumbent at base, with sterile leafy shoots...**4. P. divaricata.**
    Upper leaves linear or linear-lanceolate; stems erect or nearly so, with no decumbent sterile shoots...**5. P. pilosa.**

1. Phlox subulata L. MOSS PINK. GROUND PINK.

On rocks at Great Falls and Broadwater. Feb.–May; fr. June. Eastern U. S.

2. Phlox paniculata L. GARDEN PHLOX.

Frequent in moist soil along the Potomac and occasional elsewhere. July–Aug.; fr. Oct. Eastern U. S.

The perennial garden phlox is derived from this species, and escapes often persist for years.

3. Phlox maculata L. WILD SWEET WILLIAM.

Occasional in moist woodland along streams; near Laurel and Riverdale; more common in Va. July–Aug.; sometimes earlier. Eastern U. S.

4. Phlox divaricata L. BLUE PHLOX.

Frequent in moist woods and thickets along the Potomac and its tributaries. Apr.–May; fr. June. Eastern N. Amer.

Flowering plants are shown in plate 18A.

5. **Phlox pilosa** L.

Evidently rare or overlooked with us; Woodley Park; Herndon; Chevy Chase. May. Eastern U. S.

The annual phloxes of gardens are cultivated strains of the Texan *P. drummondii* Hook.

132. HYDROPHYLLACEAE. Waterleaf Family.

Calyx conspicuously enlarged in fruit, without appendages between the lobes, broad and saucer-shaped; capsule hanging. Leaves pinnately lobed....**1. NYCTELEA.**

Calyx not conspicuously enlarged in fruit, with or without appendages between the lobes, the lobes narrow and more or less appressed to the usually erect capsule.

- Plants perennial, with large long-petioled basal leaves; placentæ expanded so as to line the ovary wall, inclosing the ovules and seeds; leaves simple or pinnate. **2. HYDROPHYLLUM.**
- Plants annual, with numerous small, short-petioled or sessile stem leaves but no conspicuous basal leaves; placentæ mere ridges on the ovary wall; leaves pinnately lobed..**3. PHACELIA.**

1. NYCTELEA Scop.

1. **Nyctelea ambigua** (Nutt.) Standl.

Low woods above the fall line. Apr.–May. Eastern N. Amer. (*Ellisia nyctelea* L.; *Macrocalyx nyctelea* Kuntze; *N. nyctelea* Britton.)

2. HYDROPHYLLUM L. Waterleaf.

Leaves pinnately divided or lobed; corolla pale lilac or lavender...**1. H. virginianum.**

Leaves palmately 5–7-lobed, broad, cordate at base; corolla dirty white. **2. H. canadense.**

1. **Hydrophyllum virginianum** L.

Low woods above the fall line. May. Eastern N. Amer.

2. **Hydrophyllum canadense** L.

Low woods above the fall line. June. Eastern U. S.

3. PHACELIA Juss.

Racemes 2–5-flowered; filaments not hairy; capsule wider than high, constricted around the 4 large seeds..**1. P. covillei.**

Racemes several-flowered, noticeably uncoiling as the flower buds open; filaments hairy; capsule ovoid, longer than wide.

- Leaf lobes or divisions 3–5, the upper leaves not clasping; calyx lobes in fruit 4 mm. long; corolla lobes entire; seeds 6–12..........................**2. P. dubia.**
- Leaf lobes or divisions 5–9, the upper leaves clasping; calyx lobes in fruit 6–7 mm. long; corolla lobes fringed; seeds 4............................**3. P. purshii.**

1. **Phacelia covillei** S. Wats.

Rich woods along the upper Potomac; more common than either of the following found in the same region. Apr.–May. Known definitely only from our region.

The type was collected on Larkspur Island.

2. **Phacelia dubia** (L.) Small.

Rich woods. Apr.–May. Southeastern U. S. (*P. parviflora* Pursh.)

3. **Phacelia purshii** Buckl.

Rich woods. May–June. Eastern U. S.

133. BORAGINACEAE. Borage Family.

Plants glabrous throughout. Corolla blue, about 2 cm. long........**4. MERTENSIA.**

Plants hairy.

Uppermost leaves long-petioled, the petioles not winged, the blades mostly oval and rounded at the apex; flowers very small, white, sessile in one-sided spikes. **1. HELIOTROPIUM.**

Uppermost leaves sessile or on short winged petioles; flowers on long or short pedicels.

Flowers not subtended by bracts or leaves, in naked racemes or clusters, or the lowest flowers sometimes in leaf axils.

Leaves small, rarely 1.5 cm. wide; plants rarely more than 30 cm. high; nutlets of the fruit unarmed.................................**5. MYOSOTIS.**

Leaves large, most of them over 2 cm. wide and often 3–10 cm. wide or even larger; plants tall, usually 60–100 cm. high; fruit covered with barbed spines...................................**2. CYNOGLOSSUM.**

Flowers all subtended by bracts, or borne in the leaf axils.

Stems bristly-hairy, the hairs long, stiff, usually whitish; flowers blue, more or less irregular.

Corolla throat open, the stamens long-exserted; racemes short, arranged in a long narrow panicle...................................**9. ECHIUM.**

Corolla throat closed by scales, the stamens included in the corolla; racemes mostly long, not panicled.............................**8. LYCOPSIS.**

Stems not bristly-hairy, the hairs either appressed or spreading (then very slender and soft); flowers regular.

Stem leaves mostly long-petioled; fruit armed with barbed prickles. **3. LAPPULA.**

Stem leaves sessile; fruit unarmed.

Corolla salverform, the lobes rounded; lateral veins of the leaves inconspicuous; style included.......................**6. LITHOSPERMUM.**

Corolla tubular, the lobes very acute; lateral veins of the leaves very prominent; style long-exserted..................**7. ONOSMODIUM.**

1. HELIOTROPIUM L.

1. Heliotropium europaeum L.

Waste ground about Alexandria. July–Sept. Native of Eur.; naturalized in the eastern U. S.

The garden heliotropes are derived from *H. peruvianum* L. and *H. corymbosum* Ruiz & Pav.

2. CYNOGLOSSUM L.

Stems leafy throughout; leaves all very acute; calyx lobes longer than the fruit; flowers reddish or white.......................................**1. C. officinale.**

Stems naked above; lower leaves rounded or obtuse at the apex; calyx lobes shorter than the fruit; flowers blue.................................**2. C. virginianum.**

1. Cynoglossum officinale L. HOUND'S-TONGUE.

Fields and waste ground; frequent. May–June. Native of Eur.; widely naturalized in N. Amer.

White-flowered plants occur occasionally.

2. Cynoglossum virginianum L. WILD COMFREY.

Woods along the upper Potomac and Rock Creek. May–June. Southeastern U. S.

3. LAPPULA Moench.

1. Lappula virginiana (L.) Greene. STICKSEED.

Woods and thickets; frequent. July–Aug. Eastern N. Amer. (*Echinospermum virginicum* Lehm.)

4. MERTENSIA Roth.

1. Mertensia virginica (L.) DC. BLUEBELLS.
Alluvial soil along the Potomac; common. Apr.–May. Eastern N. Amer.

One of the showiest spring flowers. Plants with white flowers are sometimes found. Known also as Virginia cowslip and lungwort.

Asperugo procumbens L., native of Europe, was collected in waste ground about Washington in 1898.

5. MYOSOTIS L. FORGET-ME-NOT.

Myosotis scorpioides L., the common forget-me-not, with blue flowers, was collected in Washington, June, 1897 (*Kearney*). Native of Eur. and Asia; often cultivated and frequently escaping in the eastern U. S.

Hairs of the calyx all straight; plants perennial; flowers blue..............**1. M. laxa**
Hairs of the calyx, at least some of them, with hooked tips; plants annual or biennial; flowers white.
  Calyx not over 5 mm. long at maturity; fruiting racemes with many close flowers, these on erect or ascending pedicels; nutlets 1.5 mm. long.....**2. M. virginica.**
  Calyx 6–7 mm. long at maturity; fruiting racemes with few remote flowers, these on usually recurved pedicels; nutlets 2 mm. long............**3. M. macrosperma.**

1. Myosotis laxa Lehm.
Wet soil, usually along streams or ditches; frequent. May–Aug. Eastern N. Amer.; also in Eur. (*M. palustris* of Ward's Flora.)

Myosotis arvensis (L.) Hill, a blue-flowered species, was collected in the Department of Agriculture grounds, May, 1905 (*House*). Eastern N. Amer., perhaps adventive; also in Eur.

2. Myosotis virginica (L.) B. S. P. SCORPION-GRASS.
Dry or wet fields and hillsides; frequent. May. Eastern U. S. (*M. verna* Nutt.)

3. Myosotis macrosperma Engelm.
Wet soil; Congress Heights and along the lower Potomac. May–June. Southeastern U. S. (*M. arvensis* of Ward's Flora; *M. virginica macrosperma* Fernald.)

6. LITHOSPERMUM L.

Flowers white, about 6 mm. long, mostly in the leaf axils, the corolla tube about as long as the calyx lobes; plants annual or biennial................**1. L. arvense.**
Flowers bright yellow, about 12 mm. long, in short leafy racemes, the corolla tube much longer than the calyx lobes; plants perennial........ ...**2. L. canescens.**

1. Lithospermum arvense L. CORN GROMWELL.
Dry fields and roadsides; common. Apr.–May. Native of Eur.; widely naturalized in N. Amer.

The roots of this and the following species contain a purple dye.

2. Lithospermum canescens (Michx.) Lehm. HOARY PUCCOON.
Woodley Road and near Langley, in 1877 and 1884 (*Ward*). Eastern N. Amer.

7. ONOSMODIUM Michx.

1. Onosmodium virginianum (L.) DC. FALSE GROMWELL.
Dry hillsides; Terra Cotta, Bladensburg, Difficult Run, and Great Falls. June Eastern U. S.

Symphytum officinale L., comfrey, was collected at Woodside, June, 1896 (*H. W. Oldys*). Native of Eur. and Asia; sometimes adventive in eastern N. Amer.

Borago officinalis L., borage, was collected at Foundry Run, June, 1885 (*A. L. Schott*). Native of Eur.; occasionally adventive in eastern N. Amer.

8. LYCOPSIS L.

1. **Lycopsis arvensis** L. BUGLOSS.

Collected in several places within our area; probably not established. June–July. Native of Eur. and Asia; occasionally adventive in eastern N. Amer.

9. ECHIUM L.

1. **Echium vulgare** L. VIPER'S BUGLOSS.

Old fields; occasional. June–July. Native of Eur.; widely naturalized in N. Amer.

White-flowered plants are sometimes found.

134. VERBENACEAE. Vervain Family.

Plants erect; corolla 5-lobed; fruit composed of 4 nutlets; flowers in long spikes. 1. **VERBENA.**

Plants prostrate or ascending; corolla 4-lobed; fruit of 2 nutlets; flowers in short headlike spikes...2. **LIPPIA.**

1. VERBENA L.

Leaves deeply lobed; plants annual. Corolla white; fruit in interrupted spikes. 1. **V. officinalis.**

Leaves merely toothed; plants perennial.

  Leaves linear to oblanceolate, broadest above the middle. Corolla purple or blue; spikes dense, the fruits overlapping......................2. **V. angustifolia.**

  Leaves ovate or lanceolate, broadest near the base.

    Spikes crowded, dense; corolla blue or pink.......................3. **V. hastata.**

    Spikes slender, interrupted, the flowers not overlapping; corolla white. 4. **V. urticifolia.**

1. **Verbena officinalis** L. EUROPEAN VERVAIN.

Waste ground about Georgetown and Alexandria. June–Aug. Native of Eur.; naturalized in many parts of the U. S.

2. **Verbena angustifolia** Michx. NARROW-LEAF VERVAIN.

Open fields; common. July–Aug. Eastern U. S.

3. **Verbena hastata** L. BLUE VERVAIN.

Damp soil; frequent. July–Aug. Eastern N. Amer.

4. **Verbena urticifolia** L. WHITE VERVAIN.

Open fields; frequent. July–Aug. Eastern N. Amer.

2. LIPPIA L.

1. **Lippia lanceolata** Michx.

Wet flats along the Potomac. July–Aug. Eastern N. Amer. (*Phyla lanceolata* Greene.)

135. MENTHACEAE. Mint Family.

Inflorescence composed of dense axillary whorls, compact heads, or close spikes.

  Flowers axillary, without conspicuous colored bracts, sessile.

    Plants densely white-woolly.......................................6. **MARRUBIUM.**

    Plants glabrous or hairy, not densely woolly.

      Corolla strongly 2-lipped; leaves rounded or cut-lobed.

        Upper leaves wedge-shaped at the base, sharply lobed; plants tall, erect. 13. **LEONURUS.**

        Upper leaves heart-shaped or clasping; plants low, often trailing. 12. **LAMIUM.**

Corolla nearly regular; leaves ovate to lanceolate.

Plants not odorous; fertile stamens 2......23. **LYCOPUS.**

Plants strongly odorous; fertile stamens 4......24. **MENTHA.**

Flowers terminal, or terminal and axillary in the uppermost axils, often with conspicuous colored bracts.

Bracts broad, much exceeding the flowers, whitish, yellowish, or purplish, very conspicuous......16. **MONARDA.**

Bracts very narrow or, if broad, the upper ones, at least, not longer than the flowers.

Flowers in spikes.

Plants soft-downy.

Flowers white, spotted with purple; corolla 2-lipped......8. **NEPETA.**

Flowers bright blue; corolla seemingly 1-lipped......1. **AJUGA.**

Plants glabrous or hairy, but not downy.

Flowers greenish yellow. Spikes long and somewhat slender, but stiff and dense......7. **AGASTACHE.**

Flowers white or purple.

Corolla 2-lipped; spikes thick......10. **PRUNELLA.**

Corolla nearly regular; spikes slender......24. **MENTHA.**

Flowers in heads, occasionally with whorls in the axils of the upper leaves.

Plants corymbosely branched, stiffly erect. Flower heads often clustered. 21. **KOELLIA.**

Plants simple or with few branches, often more or less procumbent.

Corolla pale bluish, spotted; fertile stamens 2......17. **BLEPHILIA.**

Corolla lavender, pinkish, or white; fertile stamens 4. 20. **CLINOPODIUM.**

Inflorescence composed of loosely 1–several-flowered terminal or axillary clusters, of racemes, or of loose interrupted spikes.

Calyx with a prominent protuberance on the upper side, not toothed. Corolla blue and white......5. **SCUTELLARIA.**

Calyx without a protuberance on the upper side, toothed.

Flowers in loose 1–few-flowered clusters, axillary or terminal, or both, not in spikes or racemes.

Corolla regular or nearly so, 5-lobed or cleft.

Calyx equally 5-lobed; stamens scarcely longer than the corolla. 3. **ISANTHUS.**

Calyx with 3 long and 2 short teeth; stamens greatly exceeding the corolla. 4. **TRICHOSTEMA.**

Corolla very irregular, 2-lipped.

Flowers mostly terminal, in cymose clusters. Plants corymbosely branched. 22. **CUNILA.**

Flowers mostly axillary, in few-flowered clusters or solitary.

Leaves coarsely crenate or serrate, large.

Leaves reniform or rounded heart-shaped; flowers usually bluish. 9. **GLECOMA.**

Leaves ovate; flowers white......19. **MELISSA.**

Leaves sparingly crenate or dentate, small.

Leaves broadly ovate, mostly rounded at the base; stamens 4. 20. **CLINOPODIUM.**

Leaves oblong-ovate, acuminate at the base; stamens 2. 18. **HEDEOMA.**

Flowers in spikes or racemes.

Inflorescence a loose raceme. Flowers yellow; leaves large. 25. **COLLINSONIA.**

Inflorescence a more or less interrupted spike.
  Flowers either nearly regular or seemingly 1-lipped.
    Spikes thick; flowers large, seemingly 1-lipped............2. **TEUCRIUM.**
    Spikes slender; flowers small, nearly regular...............24. **MENTHA.**
  Flowers distinctly 2-lipped.
    Plants purple or purplish green..........................26. **PERILLA.**
    Plants green, not purplish.
      Calyx distinctly 2-lipped..................................15. **SALVIA.**
      Calyx nearly regular.
        Plants white-hairy or canescent.
          Flowers large, bright blue...............................1. **AJUGA.**
          Flowers small, white or purplish.......................8. **NEPETA.**
        Plants puberulent, pubescent, or hirsute, but not whitened.
          Leaves narrowly lanceolate, merely puberulent; spikes rather loosely flowered, continuous..........11. **DRACOCEPHALUM.**
          Leaves broader, conspicuously pubescent or hirsute; spikes composed of interrupted whorls...........................14. **STACHYS.**

1. AJUGA L.

1. Ajuga genevensis L. BUGLEWEED.

Established in a pasture near Maryland Agricultural College. July. Native of Eur.; locally established in the middle coastal states.

2. TEUCRIUM L.

1. Teucrium canadense L. WOOD-SAGE.

Rich low ground. July–Aug. Eastern U. S.

3. ISANTHUS Michx.

1. Isanthus brachiatus (L). B. S. P. FALSE PENNYROYAL.

Collected only once, "Flats below mill," Aug. 12, 1877 (*Ward*). Eastern N. Amer. (*I. coeruleus* Michx.)

4. TRICHOSTEMA L.

1. Trichostema dichotomum L. BLUECURLS.

Dry fields throughout the region. Sept.–Oct. Eastern N. Amer.

The common name is not strictly applicable, for a pink-flowered form is fairly common.

T. lineare Walt. is reported in Brereton's Prodromus.

5. SCUTELLARIA L. SKULLCAP.

Flowers solitary, axillary, less than 10 mm. long.
  Leaves on the middle of the stem broadly ovate, usually dentate, 2–4.5 cm. long; nutlets slender-stalked, conspicuously winged..................1. **S. nervosa.**
  Leaves on the middle of the stem narrowly ovate or lanceolate, entire or nearly so, less than 2 cm. long; nutlets short-stalked, wingless.........2. **S. parvula.**
Flowers in racemes or panicles or, if occasionally solitary, more than 15 mm. long.
  Stem leaves all rounded or cordate at the base.
    Flowers 5–8 mm. long, in one-sided racemes.....................3. **S. lateriflora.**
    Flowers 12–15 mm. long, not in one-sided racemes.
      Plants glabrous; leaves thin, not veiny..........................4. **S. saxatilis.**
      Plants soft-hairy; leaves thick, veiny, rugose.......................5. **S. ovata.**
  Stem leaves, at least some of them, acute to acuminate at the base.
    Stem leaves, except the lowest, entire.........................6. **S. integrifolia.**

Stem leaves crenate, dentate, or serrate.
  Inflorescence and lower surface of leaves covered with fine white down. **7. S. incana.**
  Inflorescence and lower surface of leaves glabrous or merely pilose.
    Corolla 12–17 mm. long; leaves somewhat pilose, mostly obtuse. **8. S. ovalifolia.**
    Corolla 20–25 mm. long; leaves nearly glabrous, acuminate at both ends. **9. S. serrata.**

1. Scutellaria nervosa Pursh.

Woods and thickets, probably throughout the region. May–June. Eastern N. Amer.

A form with entire leaves has been collected.

2. Scutellaria parvula Michx.

Woods and sandy banks; apparently not common. May–July. Eastern N. Amer.

The rootstock are moniliform and tuber-bearing.

3. Scutellaria lateriflora L. MAD-DOG SKULLCAP.

Usually in wet places; chiefly east and south of Washington. July–Sept. Widely distributed in N. Amer.

4. Scutellaria saxatilis Ridd.

Known only from the rocky wooded banks of the upper Potomac, where it is not rare. June–Aug. Del. to Ohio and S. C.

The thin heart-shaped stem leaves on slender petioles are a marked character.

5. Scutellaria ovata Hill.

Rocky woods; rare; Difficult Run and Great Falls. June. Southern states, north to Pa. (*S. versicolor* Nutt.; *S. cordifolia* Muhl.)

6. Scutellaria integrifolia L.

Common. June–July. Eastern U. S.

Distinguished by its oblong-lanceolate entire upper stem leaves.

7. Scutellaria incana Muhl.

Woods and river banks; collected only at Glen Echo. July–Aug. Eastern N. Amer. (*S. canescens* Nutt.)

8. Scutellaria ovalifolia Pers.

Perhaps our commonest skullcap, particularly above the fall line. May–July. Eastern U. S. (*S. pilosa* Michx.)

The rather distant, nearly ovate leaves on nearly simple stems form a ready mark of distinction.

9. Scutellaria serrata Andr.

Fairly common in woods above the fall line. May–June. Eastern U. S.

The handsomest labiate of this region; the large blue and white flowers and bright green leaves make a brilliant contrast of colors.

S. galericulata L. is listed in Brereton's Prodromus.

6. MARRUBIUM L.

1. Marrubium vulgare L. HOREHOUND.

Waste places. June–Aug. Native of Eur. and Asia; widely naturalized in N. Amer.

7. AGASTACHE Clayt.

1. Agastache nepetoides (L.) Kuntze. GIANT HYSSOP.

Woods along the Potomac. July–Sept. Eastern N. Amer. (*Lophanthus nepetoides* Benth.)

8. NEPETA L.

1. Nepeta cataria L. CATNIP.

Fairly common in waste places. July–Sept. Native of Eur. and Asia; widely naturalized in N. Amer.

9. GLECOMA L.

1. Glecoma hederacea L. GROUND IVY.

Common on shady roadsides and clearings. March–July. Native of Eur. and Asia; widely distributed in N. Amer. (*Nepeta hederacea* Trevis.; *N. glecoma* Benth.)

Gynomonoecious, the perfect flowers being about 14–16 mm. long and the pistillate flowers about half that length. Abnormal forms, such as double flowers, are not rare.

Moldavica parviflora (Nutt.) Britton was collected in waste ground near U Street between Seventeenth and Eighteenth Streets, N. W., June 16, 1896 (*Steele*). Native farther north and west. (*Dracocephalum parviflorum* Nutt.)

10. PRUNELLA L.

1. Prunella vulgaris L. HEAL-ALL.

Common in woods and fields. May–Oct. Throughout N. Amer.; also in Eur.

White-flowered forms are not rare.

Prunella laciniata L., native of Eur., was collected as a waif near Aqueduct Bridge, July 10, 1890 (*Coville*).

11. DRACOCEPHALUM L.

1. Dracocephalum virginianum L.

Fairly common in scattered localities along the Potomac. July–Sept. Eastern N. Amer. (*Physostegia virginiana* Benth.)

D. denticulatum Ait. is listed in Brereton's Prodromus: this presumably refers to the lax-flowered form of *D. virginianum* found here.

12. LAMIUM L.

Upper leaves clasping, crenate-toothed............................**1. L. amplexicaule.**
Upper leaves petioled, merely crenate..............................**2. L. purpureum.**

1. Lamium amplexicaule L. HENBIT.

Widely scattered throughout the region in woods and waste places. March–Oct. Native of Eur.; widely naturalized in N. Amer.

Forms with white or pink flowers are not rare.

2. Lamium purpureum L. DEAD NETTLE.

Department of Agriculture grounds, Soldiers' Home Park, and near Lock 11, C. & O. Canal; probably elsewhere in waste ground. Apr.–Oct. Native of Eur.; naturalized in eastern N. Amer.

13. LEONURUS L.

1. Leonurus cardiaca L. MOTHERWORT.

Common along the banks of the Potomac. June–Sept. Native of Eur. and Asia; naturalized in N. Amer.

14. STACHYS L.

Leaves mostly petioled; stems hairy only on the angles..................**1. S. aspera.**
Leaves mostly sessile; stems at least slightly hairy on sides and angles.
2. S. palustris.

1. Stachys aspera Michx. HEDGE NETTLE.

Moist soil throughout the region. June–Sept. Eastern N. Amer.

The leaves are generally larger, thinner, and more nearly glabrous than in the next species.

2. Stachys palustris L. WOUNDWORT.

In much the same locations as the preceding species; not common. June–Sept. Widely distributed in N. Amer.

15. SALVIA L.

Stems naked or with 1 or 2 pairs of reduced leaves; leaves mostly lyrate-lobed or pinnatifid, obovate..1. **S. lyrata.**
Stems more or less leafy; leaves broadly ovate, serrate, cuneate or truncate at the base. 2. **S. urticifolia.**

1. Salvia lyrata L. Lyre-leaf sage.

Abundant in woods of the Piedmont Region. May–July. Eastern U. S.

2. Salvia urticifolia L. Nettle-leaf sage.

Rather rare in dry woods. Apr.–June. Eastern U. S.

Salvia verbenacca L. was collected at Ammendale, May 28, 1916 (*Brother Arsène*). Native of Eur.; locally established in the northeastern States.

16. MONARDA L.

Corolla yellowish, spotted with purple.............................1. **M. punctata.**
Corolla purplish to dull white, sometimes spotted.
  Leaves thin, with spreading pubescence; calyx teeth bristle-pointed. 2. **M. clinopodia.**
  Leaves firm, canescent beneath with minute appressed hairs; calyx teeth with thin points..3. **M. mollis.**

1. Monarda punctata L. Horsemint.

Common, especially in the Coastal Plain, usually in dry fields. July–Oct. Eastern U. S.

2. Monarda clinopodia L.

Rather abundant in woods of the Piedmont Region. June–Aug. Eastern U. S.

All specimens referred to *M. fistulosa* L. are undoubtedly this species, except one from the Seaman collection, which was probably from outside our range, and one specimen of *M. mollis.*

3. Monarda mollis L.

Woodley, Aug. 16, 1899 (*Steele*). Eastern U. S., west to Colo.

M. didyma L. is listed in Brereton's Prodromus but it is doubtful if it occurs here now.

17. BLEPHILIA Raf.

1. Blephilia hirsuta (Pursh) Torr. Wood mint.

Plummers Island and near Beltsville. July. Eastern N. Amer.

18. HEDEOMA Pers.

1. Hedeoma pulegioides (L) Pers. American pennyroyal.

Common in dry soil, mostly in the Piedmont Region. July–Sept. Eastern N. Amer.

19. MELISSA L.

1. Melissa officinalis L. Garden balm.

Waste places about Washington. June–Aug. Native of Eur.; widely naturalized in N. Amer.

20. CLINOPODIUM L.

Flowers in dense clusters; bracts large, conspicuous....................1. **C. vulgare.**
Flowers in loose clusters; bracts small and inconspicuous................2. **C. nepeta.**

1. Clinopodium vulgare L. Basil.

Woods and alluvial banks, mostly in the Piedmont Region. June–Sept. Widely distributed in N. Amer.; also in Eur. and Asia. (*Satureja vulgaris* Fritsch; *Calamintha clinopodium* Benth.)

2. Clinopodium nepeta (L.) Kuntze. BASIL THYME.

Dry waste places. June–Oct. Native of Eur. and Asia; naturalized in eastern N. Amer. (*Satureja nepeta* Scheele; *Calamintha nepeta* Link & Hoffm.)

Origanum vulgare L., wild marjoram, has been collected a few times in waste places, but is probably not established. July–Sept. Native of Eur. and Asia; naturalized in eastern N. Amer.

21. KOELLIA Moench. BEE MINT.

Leaves mostly ovate, at most two and one-half times as long as broad.
  Flower clusters less than 1.8 cm. thick; leaves rigid, minutely pubescent or glabrate, usually less than 5 cm. long................................**1. K. mutica.**
  Flower clusters 2–5 cm. thick; leaves thin, white-woolly beneath, some of them 7–10 cm. long................................**2. K. incana.**
Leaves lanceolate to linear, usually 3–7 times as long as broad or longer.
  Flower clusters in dense corymbs; leaves linear or linear-lanceolate.
    Calyx teeth slender, rigidly subulate-tipped; leaves linear, usually light green. **3. K. flexuosa.**
    Calyx teeth triangular, acute; leaves linear-lanceolate, usually darker. **4. K. virginiana.**
  Flower clusters not in dense corymbs; leaves usually broader.
    Heads densely flowered; leaves 6 times as long as broad or longer..**5. K. verticillata.**
    Heads somewhat loosely flowered; leaves not more than 5 times as long as broad. **6. K. clinopodioides.**

1. Koellia mutica (Michx.) Britton.

Low sandy ground in the Coastal Plain region. July–Aug. Eastern U. S. (*Pycnanthemum muticum* Pers.)

2. Koellia incana (L.) Kuntze.

Apparently common in dry woods and thickets of the Piedmont Region. June–Sept. Eastern N. Amer. (*Pycnanthemum incanum* Michx.)

3. Koellia flexuosa (Walt.) MacM.

The most abundant species in our range; seemingly confined to the Piedmont Region. June–Aug. Eastern U. S. (*Pycnanthemum flexuosum* B. S. P.; *P. linifolium* Pursh.)

4. Koellia virginiana (L.) MacM.

Not common; along the Potomac east of the fall line. Aug.–Oct. Eastern U. S. (*Pycnanthemum virginianum* Dur. & Jacks.; *P. lanceolatum* Pursh.)

5. Koellia verticillata (Michx.) Kuntze.

Wet places throughout the region; not common. July–Sept. Eastern U. S. (*Pycnanthemum torreyi* Benth.; *P. verticillatum* Pers.)

6. Koellia clinopodioides (Torr. & Gray) Kuntze.

Dry soil in the Piedmont Region. July–Oct. Eastern U. S. (*Pycnanthemum clinopodioides* Torr. & Gray.)

K. aristata (Michx.) Kuntze is listed in Brereton's Prodromus. As this species is a coastal plant, it is likely that the specimens were collected outside our range.

Thymus serpyllum L., creeping thyme, has been collected a few times as an escape from gardens. Native of Eur. and Asia; adventive in eastern N. Amer.

22. CUNILA L.

1. Cunila origanoides (L.) Britton. DITTANY.

Common in open woods and dry sandy fields. Aug.–Oct. Eastern U. S. (*C. mariana* L.)

23. LYCOPUS L.

Flower whorls bristly with long slender calyx teeth.
  Leaves incised or pinnately lobed, at least at the base; corolla about as long as the calyx...1. **L. americanus.**
  Leaves serrate; corolla twice as long as the calyx..................2. **L. rubellus.**
Flower whorls not bristly, the calyx teeth short and inconspicuous.
  Leaves mostly petioled, dark green, firm; root slender, not tuberous-thickened. 3. **L. virginicus.**
  Leaves mostly sessile, light green, thin; root tuberous-thickened..4. **L. uniflorus.**

1. **Lycopus americanus** Muhl. WATER HOREHOUND.
Wet soil; along the upper Potomac. June–Oct. Widely distributed in N. Amer. (*L. sinuatus* Ell.)

2. **Lycopus rubellus** Moench.
Wet soil along the Potomac and some of its tributaries; rarely collected. Aug.–Oct. Eastern U. S. (*L. europaeus integrifolius* A. Gray.)

3. **Lycopus virginicus** L. BUGLEWORT.
Common in swamps and low wet woods throughout our region. Aug.–Oct. Eastern U. S. (*L. sherardi* Steele.)

4. **Lycopus uniflorus** Michx.
Rarely collected; found in much the same habitats as the preceding species, chiefly in the Coastal Plain. Eastern N. Amer.

24. MENTHA L.

Flowers in terminal leafless spikes.
  Spikes narrow, interrupted; leaves mostly sessile......................1. **M. spicata.**
  Spikes thick, but slightly interrupted; leaves mostly petioled.......2. **M. piperita.**
Flowers in axillary whorls.
  Upper leaves much reduced in size...............................3. **M. cardiaca.**
  Upper leaves but slightly reduced...........................4. **M. canadensis.**

1. **Mentha spicata** L. SPEARMINT.
Wet places throughout our region. July–Aug. Native of Eur.; widely naturalized in N. Amer. (*M. viridis* L.)

2. **Mentha piperita** L. PEPPERMINT.
Along the Potomac and its tributaries. July–Aug. Native of Eur.; naturalized in eastern N. Amer.

3. **Mentha cardiaca** Baker.
Shores of the Potomac; has been collected rarely. Northeastern N. Amer.
Variable in pubescence. Calyx teeth long-subulate.

4. **Mentha canadensis** L. WILD MINT.
Common along brooks and in moist places throughout our region. July–Oct. Widely distributed in N. Amer.

25. COLLINSONIA L.

1. **Collinsonia canadensis** L. CITRONELLA.
Frequent in dry woods of the Piedmont Region. Aug.–Oct. Eastern N. Amer.
The style twisted to one side of the stamens gives the flowers a peculiar lop-sided appearance.

26. PERILLA L.

1. **Perilla frutescens** (L.) Britton. PERILLA.
Not rare throughout our region, usually in waste places. July–Oct. Native of Asia; naturalized in the eastern U. S. (*P. ocimoides crispa* of Ward's Flora.)

136. SOLANACEAE. Nightshade Family.

The following species are commonly cultivated: The tomato, *Lycopersicon esculentum* Mill., the potato, *Solanum tuberosum* L., the eggplant, *S. melongena* L., Jerusalem cherry, *S. pseudo-capsicum* L., and petunias, *Petunia axillaris* (Lam.) B. S. P., with white flowers, and *P. violacea* Lindl., with violet-purple flowers. They may occasionally be found around refuse heaps, but seldom persist.

Plants shrubby..**1. LYCIUM.**
Plants herbaceous (*Solanum dulcamara* shrubby below, the flowering stems herbaceous).
  Fruit inclosed in an inflated calyx.
    Calyx split to the base; flowers purple or blue..................**2. PHYSALODES.**
    Calyx not split, merely toothed; flowers yellow, usually with purple centers. **3. PHYSALIS.**
  Fruit not inclosed in an inflated calyx. Flowers white, blue, or purple.
    Corolla funnel-shaped, more than 3 cm. long; fruit a spiny capsule ..**4. DATURA.**
    Corolla saucer-shaped; fruit a berry...............................**5. SOLANUM.**

1. LYCIUM L.

1. Lycium halimifolium Mill. MATRIMONY VINE.

Fields and waste places; common. May–Aug. Native of Eur.; escaped from cultivation in the U. S. (*L. vulgare* Dunal.)

2. PHYSALODES Boehm.

1. Physalodes peruvianum Kuntze. APPLE OF PERU.

Waste ground near dwellings; uncommon. July–Sept. Eastern U. S.; introduced from tropical Amer. (*Nicandra physalodes* Pers.; *P. physalodes* Britton.)

3. PHYSALIS L. GROUND CHERRY.

Plants annual.
  Fruiting peduncles over 2 cm. long; leaves glandular-pubescent, especially along the veins...**1. P. pubescens.**
  Fruiting peduncles less than 2 cm. long; leaves glabrous or nearly so..**2. P. ixocarpa.**
Plants perennial.
  Leaves 1.5–2.2 times as long as broad, tapering at both ends........**3. P. virginiana.**
  Leaves 1.2–1.5 times as long as broad, cordate at the base......**4. P. heterophylla.**

1. Physalis pubescens L.

Sandy soil; not very abundant. July–Sept. Southern states, north to Pa.

2. Physalis ixocarpa Brot.

Waste ground, usually escaped from cultivation; not very common. Sept.–Oct. Native of Mex. (*P. pubescens* of Ward's Flora.)

3. Physalis virginiana Mill.

Open places; not very common. July–Sept. Eastern U. S.

4. Physalis heterophylla Nees.

Sandy or rich soil; common. July–Oct. Eastern U. S. (*P. viscosa* of Ward's Flora.)

4. DATURA L.

1. Datura stramonium L. JIMSON-WEED.

Waste places and open fields; common. June–Sept. Eastern U. S. and tropical Amer.

There are two forms, one with white flowers and green stems, which is the original *D. stramonium*, and one with purple flowers and purple stems which has been called *D. tatula* L. Both have a very disagreeable odor, especially when crushed. Jimson is a contraction of Jamestown. Thorn-apple is another common name for plants of this genus.

5. SOLANUM L.

Solanum rostratum Dunal, the buffalo bur, native of the western U. S., was collected at Alexandria by C. L. Pollard, June 15, 1896, and has been reported from Mount Rainier.

Plants prickly. Flowers white or bluish........................**1. S. carolinense.**
Plants not prickly.
Flowers white; fruit a small black berry; plant not climbing.........**2. S. nigrum.**
Flowers purple or blue; fruit a red berry; plant climbing.........**3. S. dulcamara.**

1. Solanum carolinense L. HORSE NETTLE.
Common weed in gardens and waste places. May–Sept. Eastern U. S.

2. Solanum nigrum L. NIGHTSHADE.
Shaded woods and waste places; common. July–Sept. Cosmopolitan.

3. Solanum dulcamara L. BITTERSWEET.
Woods or waste places; uncommon. May–Sept. Native of Eur.; escaped from cultivation in N. Amer.

137. SCROPHULARIACEAE. Figwort Family.

Leaves all or mostly alternate, only the very lowest, if any, opposite or whorled.
Flowers all borne in the axils of the leaves, on long, very slender pedicels, yellowish and purplish. Leaves entire except for lobes at the base; plants very hairy, prostrate..**2. KICKXIA.**
Flowers all or mostly in spikes or racemes.
Leaves deeply lobed. Flowers yellowish or reddish; plants hairy. **20. PEDICULARIS.**
Leaves entire or merely toothed.
Corolla spurred, blue or yellow; leaves entire, linear; plants glabrous or nearly so... **3. LINARIA.**
Corolla saucer-shaped, not spurred, yellow or white; leaves more or less toothed, broad; plants more or less hairy or densely woolly.......**1. VERBASCUM.**
Leaves opposite, at least most of them, those of the inflorescence sometimes alternate.
Plants trees. Leaves very large, broadly ovate; flowers violet.. ..**7. PAULOWNIA.**
Plants herbaceous.
Leaves all entire.
Leaves whorled, broadly oblong; flowers minute, white or purplish, very irregular..**13. MICRANTHEMUM.**
Leaves opposite, linear; flowers large, showy, purple or rose-colored, nearly regular..**18. AGALINIS.**
Leaves, at least some of them, toothed or lobed, sometimes only very slightly toothed.
Flowers borne in the axils of the leaves, the subtending leaves not much smaller than the other stem leaves.
Leaves, at least the upper ones, more or less lobed, sometimes only with small lobes at the base.
Lower leaves lobed or toothed; corolla yellow; branches of the inflorescence with viscid pubescence..................**17. AUREOLARIA.**
Lower leaves entire; corolla purple or white; branches of the inflorescence not viscid.
Plants rough-hairy; leaves sessile; corolla nearly regular. **19. OTOPHYLLA.**
Plants nearly glabrous, with only minute hairs; leaves short-stalked; corolla 2-lipped, the upper lip hooded........**21. MELAMPYRUM.**

Leaves merely toothed or entire, never lobed.
  Capsules and ovaries flat, notched at the apex. Flowers blue or white. **14. VERONICA.**
  Capsules and ovaries neither flat nor notched.
    Flowers closely sessile; plants very hairy.....**11. SOPHRONANTHE.**
    Flowers evidently stalked, in some plants the stalks very short, but the plants then glabrous.
      Calyx tubular, angled, toothed, the lobes much shorter than the tube, corolla blue, 2.5 cm. long or larger.................**8. MIMULUS.**
      Calyx cleft nearly or quite to the base, not angled; corolla not blue, much smaller.
        Plants more or less pubescent, or sometimes nearly glabrous, the pedicels then stout and not longer than the calyx; corolla yellow or whitish; calyx often with 2 bractlets at the base. **10. GRATIOLA.**
        Plants glabrous; pedicels slender, much longer than the calyx; corolla purple or purplish; calyx without bractlets.
          Upper leaves broad at the base; capsule as long as the sepals or longer; fertile stamens 2..................**12. ILYSANTHES.**
          Upper leaves long-tapering at the base; capsule shorter than the sepals; fertile stamens 4..................**9. MECARDONIA.**
Flowers not axillary, or only a few axillary, mostly in spikes, racemes, panicles, or cymes, the leaves of the inflorescence, if any, much reduced.
  Capsules and ovaries flat, notched at the apex.............**14. VERONICA.**
  Capsules and ovaries neither flat nor notched at the apex.
    Stem leaves whorled, sharply toothed. Flowers white or bluish, in long, slender, very dense spikes........................**15. LEPTANDRA.**
    Stem leaves not whorled.
      Calyx lobes toothed, very unequal. Leaves lobed, the lobes toothed; corolla yellow, 1.5–2 cm. long..................**20. PEDICULARIS.**
      Calyx lobes entire, nearly equal.
        Calyx lobes very obtuse, much imbricate, the calyx bracted at the base. Flowers white or pinkish, about 2.5 cm. long; plants glabrous.......................................**5. CHELONE.**
        Calyx lobes mostly acute, little if at all imbricate, the calyx not bracted.
          Corollæ yellow, large and showy; leaves often lobed; plants often very viscid. Calyx lobes as long as the tube or shorter. **17. AUREOLARIA.**
          Corolla not yellow; leaves never lobed; plants very slightly if at all viscid.
            Calyx tubular, the lobes much shorter than the tube; flowers sessile or nearly so, purplish blue..........**16. BUCHNERA.**
            Calyx not tubular, the lobes longer than the tube; flowers stalked.
              Corolla white to purple; leaves sessile.......**6. PENSTEMON.**
              Corolla lurid within; leaves petioled ....**4. SCROPHULARIA.**

1. VERBASCUM L.

Plants very woolly; flowers in dense spikes, yellow.....................**1. V. thapsus.**
Plants green, nearly glabrous; flowers in loose racemes, yellow or white. **2. V. blattaria.**

1. Verbascum thapsus L. MULLEIN.

Fields and waste ground; common. July–Aug. Native of Eur. and Asia; widely naturalized in N. Amer.

2. Verbascum blattaria L. MOTH MULLEIN.

Fields and waste ground; common. June–July. Native of Eur.; extensively naturalized in N. Amer.

2. KICKXIA Dum.

1. Kickxia elatine (L.) Dum.

Fields and waste ground; occasional. July–Sept. Native of Eur.; naturalized in eastern N. Amer. (*Linaria elatine* Mill.)

3. LINARIA Mill.

Flowers yellow; leaves pale green..**1. L. vulgaris.**
Flowers blue; leaves bright green..**2. L. canadensis.**

1. Linaria vulgaris Hill. BUTTER-AND-EGGS.

Fields and waste ground; frequent. June–Aug. Native of Eur. and Asia; widely naturalized in N. Amer. (*L. linaria* Karst.)

The plants have a very marked and characteristic odor.

2. Linaria canadensis (L.) Dum. BLUE TOAD-FLAX.

Dry woods or fields; frequent. May–June. Widely distributed in N. Amer.; also in S. Amer.

Corolla often much reduced in autumnal specimens, the flowers being cleistogamous.

4. SCROPHULARIA L.

1. Scrophularia marylandica L. FIGWORT.

Woods and thickets; occasional. Aug.–Sept. Eastern U. S. (*S. nodosa* of Ward's Flora.)

5. CHELONE L.

1. Chelone glabra L. TURTLEHEAD.

Swamps; infrequent. Aug.–Sept. Eastern N. Amer.

6. PENSTEMON Mitchell. BEARD-TONGUE.

Stems hairy throughout, with usually long hairs; throat of the corolla densely bearded. **1. P. hirsutus.**
Stems nearly or quite glabrous, usually with very minute hairs below, the branches of the inflorescence more or less hairy; throat of the corolla very slightly or not at all bearded.
  Corolla purplish, 2–2.5 cm. long, the tube not enlarged near the base. **2. P. laevigatus.**
  Corolla white or pinkish, 2.5–3 cm. long, the tube slightly enlarged on one side near the base..**3. P. digitalis.**

1. Penstemon hirsutus (L.) Willd.

Woods and thickets; frequent. May–June. Eastern U. S. (*P. pubescens* Soland.)

2. Penstemon laevigatus Soland.

Woods and thickets; frequent. May–June. Eastern U. S. (*P. penstemon* Britton.)

3. Penstemon digitalis (Sweet) Nutt.

Woods and thickets; occasional. May–July. Eastern U. S. (*P. laevigatus digitalis* A. Gray.)

This is not very definitely separated from the preceding species, and probably does not deserve specific rank.

7. PAULOWNIA Sieb. & Zucc.

1. Paulownia tomentosa (Thunb.) Baill. EMPRESS TREE.

Frequent in waste ground. Native of Japan; common in cultivation and often escaping.

This is probably the most rapid grower of any tree found in the eastern United States, sprouts attaining a very large size in a single season. The flower panicles are formed in autumn. The large showy flowers appear before the leaves.

8. MIMULUS L. MONKEY FLOWER.

Leaves sessile; pedicels longer than the calyx .... 1. **M. ringens.**
Leaves petioled; pedicels shorter than the calyx .... 2. **M. alatus.**

1. **Mimulus ringens** L.
Swamps and along streams; frequent. July–Aug. Eastern N. Amer.

2. **Mimulus alatus** Soland.
Swamps and along streams; frequent. July–Aug. Eastern U. S.

Mazus japonicus (Thunb.) Kuntze, a small annual with blue flowers, native of Asia, was collected in the Department of Agriculture grounds in 1895 and 1896.

9. MECARDONIA Ruiz & Pav.

1. **Mecardonia acuminata** (Walt.) Small. WATER HYSSOP.
Low ground along the Potomac; infrequent. July–Sept. Southeastern U. S. (*Herpestis nigrescens* Benth.; *Bacopa acuminata* Robinson.)

10. GRATIOLA L. HEDGE HYSSOP.

Capsule globose, as long as the pedicel; plants glabrous or nearly so.
1. **G. virginiana.**
Capsule ovoid, much shorter than the pedicel; plants finely glandular-hairy.
  Leaves lanceolate, mostly 2.5–5 cm. long; stems usually branched; capsule equaling or slightly longer than the sepals .... 2. **G. neglecta.**
  Leaves broadly ovate, mostly 1 cm. long or shorter; stems usually simple; capsule shorter than the sepals .... 3. **G. viscosa.**

1. **Gratiola virginiana** L.
Wet soil; occasional. May. Southeastern U. S. and Mex. (*G. sphaerocarpa* Ell.)

2. **Gratiola neglecta** Torr.
Wet soil; occasional. May–June. Widely distributed in N. Amer. (*G. virginiana* of authors.)

G. aurea Muhl. has been reported from our region, but no specimens have been seen by the writer.

3. **Gratiola viscosa** Schwein.
Swamps along the Eastern Branch and Hunting Creek. Aug.–Sept. Southeastern U. S.

11. SOPHRONANTHE Benth.

1. **Sophronanthe pilosa** (Michx.) Small.
Dry or wet soil, north and east of Washington; occasional. July–Aug. Southeastern U. S. (*Gratiola pilosa* Michx.)

12. ILYSANTHES Raf. FALSE PIMPERNEL.

Pedicels longer than the leaves; calyx lobes shorter than the capsule ..... 1. **I. dubia.**
Pedicels shorter than the leaves; calyx lobes as long as the capsule or longer.
2. **I. attenuata.**

1. **Ilysanthes dubia** (L.) Barnhart.
Wet soil along the Potomac; rare. July–Aug. Eastern U. S. (*I. gratioloides* Benth.)

2. **Ilysanthes attenuata** (Muhl.) Small.
Wet soil along the Potomac and Patuxent; frequent. July–Sept. Eastern N. Amer. (*I. gratioloides* of Ward's Flora, in part.)

13. MICRANTHEMUM Michx.

1. **Micranthemum micranthemoides** (Nutt.) Wettst.
In mud along the Potomac and Hunting Creek. Sept. Southeastern U. S. (*M. nuttallii* A. Gray.)

14. VERONICA L. SPEEDWELL.

Flowers in racemes in the axils of the leaves. Plants perennial.
  Plants glabrous or nearly so, growing in or near water; leaves more than twice as long as broad; pedicels more than twice as long as the calyx.
    Leaves linear or nearly so; capsule longer than the calyx.......**1. V. scutellata.**
    Leaves ovate or oblong; capsule shorter than the calyx.........**2. V. americana.**
  Plants very hairy, growing usually in dry soil; leaves less than twice as long as broad; pedicels little if at all longer than the calyx.
    Leaves sessile; racemes loosely flowered; pedicels as long as the calyx. **3. V. chamaedrys.**
    Leaves mostly short-petioled; racemes dense; pedicels shorter than the calyx. **4. V. officinalis.**
Flowers solitary in the axils of the leaves or in terminal spikes or racemes.
  Leaves glabrous.
    Plants annual, mostly erect; flowers axillary; leaves oblong....**5. V. peregrina.**
    Plants perennial, the stems more or less creeping and rooting at the joints; flowers in terminal racemes; leaves oval or rounded...........**6. V. serpyllifolia.**
  Leaves conspicuously hairy. Plants annual.
    Flowers nearly sessile, the pedicels much shorter than the leaves..**7. V. arvensis.**
    Flowers long-stalked, the pedicels nearly or quite as long as the leaves.
      Leaves with 3 or 5 lobes or large teeth, often broader than long. Lobes of the capsule rounded..................................**8. V. hederaefolia.**
      Leaves with numerous small teeth, longer than broad.
        Corolla longer than the calyx; capsule broadly notched..**9. V. tournefortii.**
        Corolla not longer than the calyx; capsule with a narrow notch at the apex. **10. V. polita.**

1. Veronica scutellata L. MARSH SPEEDWELL.

Marshes along the upper Potomac; rare. July–Aug. Widely distributed in N. Amer.; also in Eur. and Asia.

2. Veronica americana Schwein. AMERICAN BROOKLIME.

Along brooks or in pools; region of the upper Potomac; occasional. May–June. Widely distributed in N. Amer.

3. Veronica chamaedrys L. GERMANDER SPEEDWELL.

Department of Agriculture Grounds. Apr.–May. Native of Eur.; adventive in eastern N. Amer.

4. Veronica officinalis L. COMMON SPEEDWELL.

Fields and woods; frequent. May–June. Widely distributed in eastern N. Amer.; in part adventive from Eur. and Asia.

5. Veronica peregrina L. PURSLANE SPEEDWELL.

Fields and moist ground; common. Apr.–May. Widely distributed in N. Amer.; also in Eur. and Asia.

6. Veronica serpyllifolia L. THYME-LEAF SPEEDWELL.

Moist or wet woods; frequent. Apr.–May. Widely distributed in N. Amer.; also in Eur. and Asia.

7. Veronica arvensis L. CORN SPEEDWELL.

Fields, woods, and waste ground; common. March–May; sometimes flowering even earlier. Native of Eur. and Asia; widely naturalized in N. Amer.

8. Veronica hederaefolia L. IVY-LEAF SPEEDWELL.

Moist woods along the upper Potomac; locally abundant; occasional elsewhere. March–Apr. Native of Eur. and Asia; naturalized from N. Y. to S. C.

9. Veronica tournefortii Gmel.

Lawns or waste ground; occasional. March–Apr. Native of Eur. and Asia; adventive in many parts of N. Amer. (*V. buxbaumii* Ten.; *V. byzantina* B. S. P.)

10. Veronica polita Fries.
Lawns and waste ground; frequent. March–May. Native of Eur.

15. LEPTANDRA Nutt.

1. Leptandra virginica (L.) Nutt. CULVER'S-ROOT.
Woods or thickets; frequent. July–Aug. Eastern U. S. (*Veronica virginica* L.)

16. BUCHNERA L.

1. Buchnera americana L. BLUE-HEARTS.
Dry soil; infrequent. May–Sept. Eastern U. S.

17. AUREOLARIA Raf. FALSE FOXGLOVE.

Plants glabrous throughout or nearly so. Flowers stalked.
  Leaves all or nearly all lobed..**1. A. virginica.**
  Leaves entire, or the lowest toothed..**2. A. laevigata.**
Plants viscid-hairy, at least above.
  Flowers nearly sessile; corolla glabrous outside; upper leaves entire or with few short broad lobes..**3. A. villosa.**
  Flowers long-stalked; corolla hairy outside; leaves all deeply lobed, the lobes narrow..**4. A. pedicularia.**

1. Aureolaria virginica (L.) Pennell.
Dry woods near Great Falls and Hyattsville Aug.–Sept. Eastern U. S. (*Gerardia virginica* B. S. P.; *G. quercifolia* Pursh; *Dasystoma virginica* Britton.)

2. Aureolaria laevigata Raf.
Mouth of Difficult Run, Sept., 1909 (*F. W. Pennell*). Eastern U. S. (*Gerardia laevigata* Raf.; *Dasystoma laevigata* Raf.)

3. Aureolaria villosa (Muhl.) Raf.
Dry woods and thickets; frequent. July–Aug. Eastern U. S. (*Gerardia flava* and *Dasystoma flava* of most authors.)

4. Aureolaria pedicularia (L.) Raf.
Dry woods and thickets, north and east of Washington. Aug.–Sept. Eastern U. S. (*Gerardia pedicularia* L.; *Dasystoma pedicularia* Benth.)

18. AGALINIS Raf. PURPLE FOXGLOVE.

Pedicels shorter than the calyx or but slightly exceeding it..............**1. A. purpurea.**
Pedicels twice as long as the calyx or often much longer.
  Corolla 2-lipped, 10–18 mm. long, the 2 upper lobes ascending over the stamens and style, glabrous within at base of upper lobes; seeds dark brown; leaves linear, usually straight, finely rough-hairy......................**2. A. tenuifolia.**
  Corolla not evidently 2-lipped, the lobes all spreading, pubescent within at the base of the upper lobes; leaves mostly filiform, often curved, glabrous.
    Seeds dark brown; corolla 20–25 mm. long, purple.................**3. A. holmiana.**
    Seeds light brown; corolla 15 mm. long, pink....................**4. A. decemloba.**

1. Agalinis purpurea (L.) Britton.
Moist woods and fields; common. Sept. Eastern U. S. (*Gerardia purpurea* L.)

2. Agalinis tenuifolia (Vahl) Raf.
Dry woods and fields; frequent. Aug.–Oct. Eastern N. Amer. (*Gerardia tenuifolia* Vahl.)

3. Agalinis holmiana (Greene) Pennell.
Dry woods and fields; frequent. Sept.–Oct. Southeastern U. S. (*Gerardia holmiana* Greene.)
The type was collected at Brookland.

4. **Agalinis decemloba** (Greene) Pennell.

Dry woods and fields; frequent. Aug.–Sept. Del. to N. C. (*Gerardia decemloba* Greene.)

The type was collected near Brookland.

19. OTOPHYLLA Benth.

1. **Otophylla auriculata** (Michx.) Small.

Low ground north and east of Washington and near Alexandria. Sept. Eastern U. S. (*Gerardia auriculata* Michx.)

20. PEDICULARIS L.

Stems glabrous; stem leaves chiefly opposite, shallowly lobed; capsule about as long as the calyx........1. **P. lanceolata.**
Stems woolly; stem leaves alternate, deeply lobed or parted; capsule much longer than the calyx........2. **P. canadensis.**

1. **Pedicularis lanceolata** Michx. SWAMP LOUSEWORT.

Swamps along Hunting Creek. Sept.–Oct. Eastern N. Amer.

2. **Pedicularis canadensis** L. WOOD BETONY.

Woods and thickets; occasional. Apr.–May. Eastern N. Amer., west to Colo.

21. MELAMPYRUM L.

1. **Melampyrum lineare** Lam. COW-WHEAT.

Dry woods north and east of Washington. May–Aug. Eastern and northern N. Amer. (*M. americanum* Michx.)

138. BIGNONIACEAE. Bignonia Family.

1. BIGNONIA L.

1. **Bignonia radicans** L. TRUMPET CREEPER.

Woods and thickets; frequent along the Potomac. June–Sept. Eastern U. S. Often cultivated for ornament. (*Tecoma radicans* DC.; *Campsis radicans* Seem.)

Catalpa bignonioides Walt., the catalpa, is common in cultivation and is sometimes found as an escape. Native of the southern U. S. In this species the flowers are thickly spotted within and the lobes are crimped. *C. speciosa* Warder, with only slightly spotted flowers and flat lobes, is also in cultivation. *C. ovata* Don (*C. kaempferi* Sieb. & Zucc.), a Chinese species with yellow flowers, has been reported as an escape.

Martynia louisiana Mill., the unicorn plant, has been collected a few times in waste ground. Native of the western U. S.; sometimes cultivated and escaping. (*M. proboscidea* Glox.)

139. OROBANCHACEAE. Broom-rape Family.

The plants of this family are wholly without green coloring.

Stems branched, the branches numerous, ascending, straight, simple, long, and slender........1. **LEPTAMNIUM.**
Stems not branched.
  Flowers 1–4, solitary on slender scapelike stalks 6–20 cm. long, these rising from the nearly underground stem........2. **THALESIA.**
  Flowers very numerous, sessile or short-stalked, in dense spikes on the erect stems.
    Plants glabrous; stems 2–3 cm. thick, densely covered with overlapping scales; flowers crowded, extending to the base of the stem........3. **CONOPHOLIS.**
    Plants glandular-pubescent; stems about 5 mm. thick, the scales comparatively few and scattered; flowers more or less crowded, borne on the upper half of the stem........4. **OROBANCHE.**

1. LEPTAMNIUM Raf.

1. **Leptamnium virginianum** (L.) Raf. BEECHDROPS.
Parasitic on roots of the beech in moist woods; common. Aug.–Oct. Eastern N. Amer. (*Epiphagus virginiana* Barton.)

2. THALESIA Raf.

1. **Thalesia uniflora** (L.) Britton. GHOST-PIPES.
Moist woods and thickets; common. May. Eastern N. Amer. (*Aphyllon uniflorum* Torr. & Gray.)
A tuft of the plants is shown in plate 37A.

3. CONOPHOLIS Wallr.

1. **Conopholis americana** (L. f.) Wallr. SQUAW-ROOT.
Rich hilly woods; common. May. Eastern N. Amer.
A tuft of the plants is shown in plate 34A.

4. OROBANCHE L.

1. **Orobanche minor** J. E. Smith. BROOM-RAPE.
Parasitic on clover; common. May–June. N. J. to Va.; naturalized from Eur.

140. PINGUICULACEAE. Bladderwort Family.

Plants growing in water, the stems creeping or floating, branched. Bracts of the stems attached by the base..1. **UTRICULARIA.**
Plants growing in soil, the stems erect, simple.
Bracts of the stems attached by the middle; bracts at the base of the pedicel without bractlets; calyx not inclosing the capsule.................2. **SETISCAPELLA.**
Bracts attached by the base; bracts at the base of the pedicel accompanied by a pair of bractlets; calyx inclosing the capsule.................3. **STOMOISIA.**

1. UTRICULARIA L. BLADDERWORT.

Stems creeping in the bottom of water; corolla 4–6 mm. long; flowers 1–4 on each scape..1. **U. gibba.**
Stems free-floating except for a single point of attachment; corolla 13–20 mm. long; flowers 6–20 on each scape..................................2. **U. macrorhiza.**

1. **Utricularia gibba** L.
Pools along the upper Potomac. July–Sept. Eastern N. Amer.

2. **Utricularia macrorhiza** LeConte. ZIGZAG BLADDERWORT.
Hunting Creek. Aug. Widely distributed in N. Amer. (*U. vulgaris* of American authors.)

2. SETISCAPELLA Barnhart.

1. **Setiscapella subulata** (L.) Barnhart.
Wet sandy soil; occasional. May–July. Eastern U. S. (*Utricularia subulata* L.)

3. STOMOISIA Barnhart.

1. **Stomoisia virgatula** Barnhart.
Swamp near Suitland. N. Y. to Miss. (*Utricularia virgatula* Barnhart.)

141. ACANTHACEAE. Acanthus Family.

Flowers in dense long-stalked heads or spikes, small; plants glabrous; leaves linear-lanceolate..1. **DIANTHERA.**
Flowers borne in the axils of the leaves, large; plants more or less hairy; leaves ovate or oblong..2. **RUELLIA.**

1. DIANTHERA L.

1. Dianthera americana L. WATER WILLOW.

In water; common. June–July. Eastern U. S.

2. RUELLIA L. RUELLIA.

Calyx lobes linear-lanceolate, nearly or quite as long as the corolla tube. 1. **R. strepens.**

Calyx lobes very narrow, almost bristle-like, usually shorter than the corolla tube. 2. **R. caroliniensis.**

1. Ruellia strepens L.

Woods or low ground along the upper Potomac. May–June. Eastern U. S.

2. Ruellia caroliniensis (Walt.) Steud.

Dry or moist woods or thickets; frequent. June–Aug. Eastern U. S.. (*R. ciliosa* Pursh.)

Most of our material is the form known as *R. ciliosa parviflora* (Nees) Britton (*R. parviflora* Britton), but it seems to differ in no essential character from the typical form, and scarcely deserves nomenclatorial recognition.

142. PHRYMACEAE. Lopseed Family.

1. PHRYMA L.

1. Phryma leptostachya L. LOPSEED.

Banks and thickets; not uncommon. July. Eastern N. Amer.; also in Asia.

143. PLANTAGINACEAE. Plantain Family.

1. PLANTAGO L. PLANTAIN.

Bracts of the spikes much longer than the flowers. Plants copiously pubescent; leaves linear or nearly so; corolla lobes spreading..................1. **P. aristata.**

Bracts shorter than the flowers.

- Leaves linear; plants 3–10 cm. high, minutely hairy. Corolla lobes erect and closed over the fruit..2. **P. pusilla.**
- Leaves lance-elliptic to broadly oval or oval-ovate; plants usually more than 10 cm. high.
  - Leaves copiously hairy. Seeds 2 in each capsule.
    - Corolla lobes erect in age; leaves obovate or oblong-obovate, obtuse; plants annual..3. **P. virginica.**
    - Corolla lobes spreading or recurved; leaves lance-elliptic, acute or acuminate; plants perennial......................................4. **P. lanceolata.**
  - Leaves glabrous or nearly so, broadly ovate, oval, or rounded-ovate. Corolla lobes spreading or reflexed; plants perennial.
    - Ribs, at least the upper ones, of the leaves arising from the midrib; leaves often cordate at the base; capsule 2 or 4-seeded, dehiscent at the middle. 5. **P. cordata.**
    - Ribs of the leaves distinct, none arising from the midrib; leaves never cordate; seeds 4–18.
      - Capsule circumscissile near the middle, broadly ovoid..........6. **P. major.**
      - Capsule circumscissile much below the middle, cylindric.....7. **P. rugelii.**

1. Plantago aristata Michx. BOTTLE-BRUSH PLANTAIN.

Open fields or dry soil; common. May–July. Central and western U. S.; adventive eastward.

2. Plantago pusilla Nutt.

Two collections of this from Washington are found in the National Herbarium: one, collected by Tweedy in 1886, is labeled "Near Washington"; another was collected by Ward at the southwest corner of the Soldiers' Home grounds, May 20, 1883. Eastern U. S.

3. Plantago virginica L.

Open fields; common. Apr.–May. Eastern U. S. to Mex.

4. Plantago lanceolata L. ENGLISH PLANTAIN.

Fields and waste ground; abundant. May–Aug. Native of Eur. and Asia; naturalized nearly throughout the U. S. and southern Can.

Known also as rib-grass.

5. Plantago cordata Lam. HEART-LEAF PLANTAIN.

Sandy shores at and opposite Alexandria, often growing in water; Eastern Branch. May–Aug. Eastern U. S.

6. Plantago major L. COMMON PLANTAIN.

Moist soil; abundant. June–Sept. Eur. and N. Amer.; probably naturalized from Eur. in eastern N. Amer.

7. Plantago rugelii Decaisne.

Moist ground; common. June–Sept. Nearly throughout the U. S. and southern Can.

144. RUBIACEAE. Madder Family.

Plants shrubby; flowers in very dense spheric heads............1. **CEPHALANTHUS.**
Plants herbaceous; flowers never in spheric heads.
  Leaves apparently in whorls of 4 or more. Corolla wheel-shaped, white, yellow, or greenish; calyx lobes obsolete..................................2. **GALIUM.**
  Leaves opposite by 2's.
    Fruit a bright red fleshy berry (rarely white); stems slender and creeping, rooting at the joints; leaves evergreen, long-petioled, the blades nearly or quite as broad as long. Corolla white..........................3. **MITCHELLA.**
    Fruit a dry capsule; stems erect, or sometimes procumbent but not rooting at the joints; leaves not evergreen, the blades usually much longer than broad.
      Flowers sessile in the axils of the leaves; stipules fringed with bristles. Leaves sessile, linear or narrowly lanceolate; plants annual...........4. **DIODIA.**
      Flowers pediceled; stipules without bristles.
        Corolla white; calyx lobes broadly ovate or oval; flowers mostly in dense clusters in the axils of the leaves..................5. **OLDENLANDIA.**
        Corolla bluish purple, pink, or rarely (abnormally) white; calyx lobes linear or lanceolate; flowers solitary on long slender pedicels or in terminal cymes. 6. **HOUSTONIA.**

1. CEPHALANTHUS L.

1. Cephalanthus occidentalis L. BUTTONBUSH.

Wet ground and along streams; frequent. June–Aug. Eastern N. Amer.

In some places within our range this is a small tree with well-developed trunk.

Sherardia arvensis L., field madder, was collected in the Soldiers' Home grounds, June, 1912 (*Titus Ulke*). Native of Eur.; locally adventive in the U. S.

Asperula arvensis L. was collected in waste ground along the river front, Washington, May, 1898 (*Steele*). Native of Eur.; rarely adventive in the U. S.

2. GALIUM L. BEDSTRAW.

Fruit covered with straight or hooked hairs.
  Leaves in whorls of 6 or 8, bristle-pointed, 1-nerved.
    Plants annual; stems bristly-hairy on the angles, the hairs turned downward; leaves linear-oblanceolate to linear...........................1. **G. aparine.**
    Plants perennial; stems glabrous; leaves elliptic or elliptic-oblanceolate. 2. **G. triflorum.**

Leaves in whorls of 4.
  Leaves 1-nerved; stems densely hairy; flowers conspicuously pediceled, yellowish purple.. **3. G. pilosum.**
  Leaves 3-nerved; stems glabrous or nearly so; flowers sessile or nearly so, greenish. **4. G. circaezans.**
Fruit glabrous. Plants perennial.
 Leaves acute or bristle-pointed, mostly in whorls of 6.
  Leaves linear, shining, slightly upward-scabrous on the margins, acute. **5. G. concinnum.**
  Leaves elliptic to obovate, dull, downward-scabrous, bristle-pointed. **6. G. asprellum.**
 Leaves obtuse, never bristle-pointed.
  Leaves usually all in whorls of 4, linear or nearly so; corolla lobes 4, acute. **7. G. tinctorium.**
  Leaves mostly in whorls of 6, sometimes in 4's, spatulate or spatulate-oblong; corolla lobes usually 3, obtuse.............................. **8. G. claytoni.**

1. Galium aparine L. GOOSE-GRASS.

Wet or moist ground; common. May–June. Nearly throughout N. Amer.; also in Eur.

2. Galium triflorum Michx. SWEET-SCENTED BEDSTRAW.

Damp woods or alluvial soil; common. July-Oct. Nearly throughout N. Amer. north of Mex.; also in Eur. and Asia.

3. Galium pilosum Ait. HAIRY BEDSTRAW.

Dry woods or thickets; along the Potomac and at Lanham. June–July. Eastern U. S.

4. Galium circaezans Michx. WILD LICORICE.

Open or shady woods; common. May–July. Eastern N. Amer.

5. Galium concinnum Torr. & Gray. SHINING BEDSTRAW.

Low woods along the Potomac; common. June–Aug. Eastern U. S.

6. Galium asprellum Michx. ROUGH BEDSTRAW.

Woods along the Potomac and Hunting Creek. June–Oct. Eastern N. Amer.

7. Galium tinctorium L. WILD MADDER.

Low ground near Naucks; also collected at several other localities not specified. May–June. Eastern N. Amer.

8. Galium claytoni Michx.

Swamps north and east of Washington; frequent. June–Sept. Eastern N. Amer. (*G. trifidum* of Ward's Flora.)

3. MITCHELLA L.

1. Mitchella repens L. PARTRIDGE-BERRY.

Woods, especially under pines; common. May–June; fr. in autumn, persisting until spring. Eastern N. Amer.

The "double" scarlet berries, as well as the foliage, are very handsome, and large quantities of the plant are gathered for winter decorations. A form with white fruit has been found within our range by Titus Ulke.

4. DIODIA L.

1. Diodia teres Walt. POOR-WEED.

Dry or sterile soil; common. July–Sept. Eastern U. S. to Mex.

5. OLDENLANDIA L.

1. Oldenlandia uniflora L.

Low ground near Bennings, August, 1899 (*Steele*). Eastern U. S.

6. HOUSTONIA L.

Stems glabrous, very slender; flowers solitary on long slender pedicels; plants spreading by threadlike rootstocks, often forming dense mats............**1. H. coerulea.**
Stems finely hairy or long-hairy, stout; flowers in cymes; plants tufted, never with threadlike rootstocks.
  Stems minutely hairy; stem leaves linear-oblong or linear-lanceolate; capsules as high as broad or higher..**2. H. longifolia.**
  Stems soft-hairy; stem leaves broadly ovate to ovate-oblong or lance-ovate; capsules broader than high..**3. H. purpurea.**

1. Houstonia coerulea L. Bluets.
Open fields or meadows; common. Apr.–May. Eastern N. Amer.
The flowers are shown in plate 41A.

2. Houstonia longifolia Gaertn.
Woods along the Potomac above Washington; frequent. July–Sept. Eastern U. S. (*H. purpurea longifolia* A. Gray.)

3. Houstonia purpurea L.
Woods and fields; common. May–Aug. Eastern U. S.

145. CAPRIFOLIACEAE. Honeysuckle Family.

The weigelas, *Diervilla rosea*, *D. japonica*, and other species, are handsome ornamental shrubs grown in parks and gardens. Species of *Abelia* also are cultivated. *Diervilla lonicera* Mill was collected along Rock Creek (*Oliver*) many years ago.

Plants herbaceous. Flowers yellowish, greenish, or purplish, borne in the axils of the leaves..**3. TRIOSTEUM.**
Plants woody.
  Corolla distinctly long-tubular; vines. Flowers red, or white or pink changing to yellow..**1. LONICERA.**
  Corolla not long-tubular; erect shrubs or rarely trees.
    Leaves pinnate. Flowers white, in large flat cymes............**5. SAMBUCUS.**
    Leaves simple.
      Flowers mostly clustered in the axils of the leaves, white or pinkish. **2. SYMPHORICARPOS.**
      Flowers in large flat terminal cymes, white..................**4. VIBURNUM.**

1. LONICERA L. Honeysuckle.

A common cultivated bush honeysuckle is *L. tatarica* L. It has pink or white flowers, and red fruits in June.

Upper leaves united by their bases around the stem; flowers in terminal spikes, red; fruit red..**1. L. sempervirens.**
Upper leaves distinct; flowers in pairs in the upper axils, white or pink, turning yellow; fruit black..**2. L. japonica.**

1. Lonicera sempervirens L. Trumpet honeysuckle.
Occasional in thickets and along fences. May–June; fr. June–July. Eastern U. S.

2. Lonicera japonica Thunb. Japanese honeysuckle.
Abundant almost everywhere. May–Oct.; fr. Sept.–Feb. Naturalized from Asia.
The flowers are shown in plate 42.

2. SYMPHORICARPOS Ludw.

Style glabrous; fruit white..**1. S. albus.**
Style hairy; fruit red..**2. S. orbiculatus**

1. **Symphoricarpos albus** (L.) Blake. SNOWBERRY.
Sparsely escaped from cultivation; Georgetown; Woodley Park. May–July; fr. July–late winter. Northern U. S. (*S. racemosus* Michx.)
Our plants are var. *laevigatus* (Fernald) Blake.

2. **Symphoricarpos orbiculatus** Moench. CORALBERRY.
Abundantly escaped from cultivation; old fields, roadsides, and edges of woods. July–Aug.; fr. Aug.–spring. Northern and western U. S. (*S. vulgaris* Michx.; *S. symphoricarpos* MacM.)

3. TRIOSTEUM L. HORSE GENTIAN.

Leaves united by their bases around the stem. Corolla purplish brown. **1. T. perfoliatum.**
Leaves distinct.
  Leaves more or less auricled and clasping at the base; flowers dull red. **2. T. aurantiacum.**
  Leaves narrowed to the merely sessile base; flowers yellowish..**3. T. angustifolium.**

1. **Triosteum perfoliatum** L.
Sparingly distributed in open woods. May–June; fr. July–fall. Eastern U. S.

2. **Triosteum aurantiacum** Bicknell.
Corcoran woods and Reno. May; fr. Oct. Northeastern U. S.

3. **Triosteum angustifolium** L.
Occasional in damp woods. May–June; fr. July. Eastern U. S.

4. VIBURNUM L.

The snowball, *V. opulus sterile* DC., is commonly cultivated. The highbush cranberry, *V. opulus americanum* Ait., and the wayfaring tree, *V. lantana* L., are also cultivated. The latter, a native of Europe, has ovate leaves; the former, native in the northern states, has 3-lobed leaves, like the snowball.

Leaves mostly 3-lobed, soft-downy beneath....................**1. V. acerifolium.**
Leaves not 3-lobed.
  Leaves with prominent teeth and veins.
    Stipules long, linear; leaves usually very short-petioled............**2. V. affine.**
    Stipules very small or wanting; leaves usually long-petioled.
      Petioles usually glabrous beneath, if hairy the hairs not chiefly clustered; hairs on lower surface of leaves mostly confined to axils of veins, often cobwebby, but not chiefly clustered.....................**3. V. dentatum.**
      Petioles usually densely and lower leaf surface usually more generally hairy, the pubescence chiefly of clustered hairs.
        Leaves of an ovate type, longer than broad, with about 5 pairs of veins. **4. V. scabrellum.**
        Leaves often orbicular, about as broad as long, the veins more prominent on the average and more numerous, 7–11 pairs to the leaf. **5. V. pubescens.**
  Leaves finely toothed or entire, with inconspicuous veins.
    Flower and fruit clusters long-stalked.
      Peduncles shorter than the cymes; leaves thin, usually irregularly crenate. **6. V. cassinoides.**
      Peduncles usually equal to or longer than the cymes; leaves thick, usually entire..**7. V. nudum.**
    Flower and fruit clusters nearly sessile. Leaves oval, finely and sharply serrate. **8. V. prunifolium.**

1. **Viburnum acerifolium** L. ARROW-WOOD.
Common in woods. May–June.; fr. Aug.–winter. Eastern N. Amer.

2. **Viburnum affine** Bush.

Frequent on rocks and in woods on both sides of the river about Great Falls. May; fr. July–Sept. Northeastern N. Amer.

Our plant is the pubescent form, *V. affine hypomalacum* Blake. (*V. pubescens* of authors.)

3. **Viburnum dentatum** L.

Common in moist ground and swamps. May–June; fr. July–winter. Northeastern U. S.

4. **Viburnum scabrellum** (Torr. & Gray) Chapm.

Common; in drier land, fence rows, and edges of woods. June. Southeastern U. S.

5. **Viburnum pubescens** (Ait.) Pursh.

Common in copses and fence rows. June; fr. Aug.–winter. Eastern U. S. (*V. venosum* Britton; *V. venosum canbyi* Rehder.)

This and the last preceding are closely related to *V. dentatum* and puzzling intermediate forms occur.

6. **Viburnum cassinoides** L.

In bogs now or formerly sphagnous; north and east of Washington. May–June; fr. Aug.–winter. Eastern N. Amer.

7. **Viburnum nudum** L.

With the last, but also in ordinary swampy or wet places. May–June; fr. Sept.–May. Eastern U. S.

8. **Viburnum prunifolium** L. BLACK HAW.

Abundant in a variety of situations. Apr.–June; fr. July–Apr. Eastern U. S.

A shrub, or a small tree with trunk as much as a foot in diameter.

6. SAMBUCUS L.

1. **Sambucus canadensis** L. ELDER.

Abundant in wet places. May–June; fr. July–Aug. Eastern N. Amer.

146. VALERIANACEAE. Valerian Family.

Plants perennial, spreading by slender runners; stem leaves pinnate; corolla very slender, 1–2 cm. long..**1. VALERIANA.**

Plants annual; stem leaves narrow, simple; corolla 2–3 mm. long. **2. VALERIANELLA.**

1. VALERIANA L. VALERIAN.

1. **Valeriana pauciflora** Michx.

Shaded alluvial flats; locally common at a few localities along the Potomac from High Island to Plummers Island, especially on the islands. May. Eastern U. S.

2. VALERIANELLA Hill. LAMB'S LETTUCE. CORN SALAD.

Corolla bluish, the color evident in the subpersistent corollas of fruiting specimens. Fruit flattened, rounded..**1. V. locusta.**

Corolla whitish.

  Fruits roundish or saucer-shaped, the sterile cells inflated.........**2. V. woodsiana.**

  Fruits oblong to ovate in outline.

    Fertile cell of the fruit distinctly broader than the sterile one, the fruit triangular in cross section..**3. V. chenopodifolia.**

    Fertile cell as broad as the sterile ones, the fruit 4-angled in cross section. **4. V. radiata.**

1. **Valerianella locusta** (L.) Betcke.

Damp meadows, old fields, and thickets; not uncommon, especially along the Potomac. Apr.–May. Naturalized from Eur. (*Fedia olitoria* of Ward's Flora.)

2. **Valerianella woodsiana** (Torr. & Gray) Walp.

Moist alluvial bottom lands; rare; known only from High Island to Chain Bridge. May. Eastern U. S.

3. **Valerianella chenopodifolia** (Pursh) DC.

Moist alluvial soil; rare; reported only from Sandy Landing and the region from High Island to Chain Bridge. May. Eastern U. S. (*Fedia fagopyrum* Torr. & Gray.

4. **Valerianella radiata** (L.) Dufr.

Meadows and low alluvial situations; several scattered localities near the Potomac, but apparently rare. May. Eastern U. S.

147. DIPSACACEAE. Teasel Family.

1. DIPSACUS L.

1. **Dipsacus sylvestris** Huds. TEASEL.

Waste places; known only from Great Falls and from the Potomac flats between Outlet Lock and High Island. July. Naturalized from Eur. in the northeastern U. S.

148. CUCURBITACEAE. Gourd Family.

Leaves deeply 3–7-lobed, the lobes triangular-lanceolate; staminate flowers in narrow branched racemes; pistillate flowers solitary; fruit large, 5 cm. long, armed with short bristle-like spines, dehiscent at the apex............1. **MICRAMPELIS.**

Leaves 5-angled or 5-lobed, with shallow lobes; staminate flowers in loose corymbs or racemes; pistillate flowers clustered in a head at the end of a peduncle; fruits small, burlike, sessile, 3–10 in a cluster, indehiscent ....2. **SICYOS.**

1. MICRAMPELIS Raf.

1. **Micrampelis lobata** (Michx.) Greene. WILD CUCUMBER.

Damp soil along streams, especially along the Potomac. July–Sept. Eastern N. Amer. (*Echinocystis lobata* Torr. & Gray.)

2. SICYOS L.

1. **Sicyos angulatus** L. STAR CUCUMBER.

Alluvial thickets along the Potomac and its tributaries. Aug.–Oct. Eastern N. Amer.

The root and seeds are bitter and have diuretic properties.

149. CAMPANULACEAE. Bellflower Family.

Leaves cordate-clasping; corolla saucer-shaped......................1. **SPECULARIA.**

Leaves sessile or stalked; corolla bell-shaped or saucer-shaped.....2. **CAMPANULA.**

1. SPECULARIA Heist.

1. **Specularia perfoliata** (L.) A. DC. VENUS'S LOOKING-GLASS.

Sandy fields, dryish slopes, and thickets; common. June. Eastern N. Amer. (*Legouzia perfoliata* Britton.)

2. CAMPANULA L. BELLFLOWER.

Stems very slender, weak, usually reclining, downwardly roughened on the angles; leaves linear-lanceolate, less than 1 cm. wide; flowers less than 1 cm. long, whitish..1. **C. aparinoides.**

Stems stout, erect, not roughened; leaves heart-shaped to oblong or lanceolate, large; flowers very much larger, blue.

Corolla bell-shaped; flowers borne in a long bracted 1-sided raceme; capsule globose, opening by pores at the base..............................2. **C. rapunculoides.**

Corolla saucer-shaped; flowers borne in a long leafy spike; capsule top-shaped, opening by pores at the summit..............................3. **C. americana.**

1. Campanula aparinoides Pursh. MARSH BELLFLOWER.

Swales and grassy borders of swamps; known from half a dozen localities, but easily overlooked. July. Eastern N. Amer.

2. Campanula rapunculoides L.

Old hedgerows and neglected ground; not common. July–Aug. Naturalized from Eur.

3. Campanula americana L.

Moist alluvial shaded situations; common along the upper Potomac. July. Eastern N. Amer.

150. LOBELIACEAE. Lobelia Family.

1. LOBELIA L. LOBELIA.

Flowers bright red (rarely white); corolla tube 2 cm. long or longer..1. **L. cardinalis.**

Flowers blue; corolla tube 4–15 mm. long.

- Stems branched; pods much inflated..................................2. **L. inflata.**
- Stems usually simple; pods not inflated.
  - Flowers not over 1 cm. long, borne in a very slender, long, wandlike, erect raceme; larger leaves mostly basal, the upper stem leaves few, reduced, scattered. 3. **L. spicata.**
  - Flowers 2–2.5 cm. long, borne in stout, often dense, racemes; stems conspicuously leafy throughout.
    - Leaves 5–25 cm. long, thin, acute at both ends, sparingly pubescent, the hairs few and stiff; flowers 2–2.5 cm. long; calyx with conspicuous deflexed auricles between the lobes..................................4. **L. syphilitica.**
    - Leaves not more than 5 cm. long, thick, obtuse, densely puberulent; flowers 1.5–2 cm. long; auricles of calyx short and rounded, if present. 5. **L. puberula.**

1. Lobelia cardinalis L. CARDINAL FLOWER.

Moist situations, in partial shade; not very common. Aug.–Sept. Eastern N. Amer.

2. Lobelia inflata L. INDIAN TOBACCO.

Dryish fields and thickets; common. Aug.–Sept. Eastern N. Amer.

3. Lobelia spicata Lam.

Damp or dryish situations, usually in thin shade; common. May–June. Eastern N. Amer.

4. Lobelia syphilitica L GREAT LOBELIA.

Low situations, especially near streams; not uncommon. Aug.–Sept. Eastern U. S.

5. Lobelia puberula Michx.

Moist meadows or open swamps in sandy soil; common, chiefly eastward. Aug.–Sept. Eastern U. S.

151. CICHORIACEAE.[1] Chicory Family.

Flowers blue, purple, or rarely clear white.

- Flower heads sessile; pappus of numerous very short, stiff, simple bristles. 1. **CICHORIUM.**
- Flower heads stalked; pappus of long, soft, simple or plumose bristles. 8. **LACTUCA.**

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[1] See the explanation of flower structure under Asteraceae (p. 268).

Flowers yellow or yellowish.
  Plants with naked stems, the leaves all at the base of the scapelike peduncles, these usually bearing each a single head.
    Roots bearing tubers; leaves glabrous; bracts all of equal length...2. **CYNTHIA.**
    Roots without tubers; leaves usually more or less hairy; bracts very unequal. 4. **LEONTODON.**
  Plants with leafy, usually branched stems.
    Bracts all of equal length. Plants annual........................3. **KRIGIA.**
    Bracts very unequal, the lowest much smaller and shorter than the others.
      Achenes short-spiny at the apex; flower heads sessile or nearly so; stems at flowering time bearing only a few linear entire leaves.....5. **CHONDRILLA.**
      Achenes never spiny; flower heads conspicuously stalked; stems usually with numerous well-developed leaves.
        Flower heads drooping, their stalks recurved. Pappus pale or dark brown; plants tall and coarse, the leaves often deeply lobed..6. **PRENANTHES.**
        Flower heads erect, never drooping.
          Achenes strongly compressed; teeth of the leaves often tipped with weak spines.
            Flowers 50 or more in each head, yellow, the heads few; achenes not beaked..7. **SONCHUS.**
            Flowers 6–30 in each head, yellow or blue, the heads usually very numerous; achenes usually beaked at the apex.............8. **LACTUCA.**
          Achenes not compressed; leaves mostly entire, the teeth, when present, not spine-tipped...................................9. **HIERACIUM.**

1. CICHORIUM L.

1. Cichorium intybus L. CHICORY.

Waste and cultivated ground; common. June–Aug. Native of Eur.; widely naturalized in the U. S.

A form with white flowers is found occasionally. The roots of chicory have often been used as a substitute for coffee.

Lapsana communis L., nipplewort, was collected about Washington in 1884 and 1915. Native of Eur.; sparingly adventive in the U. S.

Tragopogon porrifolius L., salsify, was reported by Ward from Uniontown and by Holm from Eckington. Native of Eur.; commonly cultivated for its edible roots, and frequently escaping. Known also as oyster plant.

2. CYNTHIA D. Don.

1. Cynthia dandelion (L.) DC. DWARF GOAT'S-BEARD.

Pine woods or open hillsides about Washington and Alexandria; infrequent. May-June. Eastern U. S. (*Krigia dandelion* Nutt.; *Adopogon dandelion* Kuntze.)

The leaves are usually toothed or lobed, but sometimes they are entire.

3. KRIGIA Schreb.

1. Krigia virginica (L.) Willd.

Open fields and on rocks; frequent. Apr.–Aug. Eastern U. S. (*Adopogon carolinianum* Britton.)

Apargia autumnalis (L.) Hoffm. (*Leontodon autumnalis* L.), fall dandelion, was collected in the Zoological Park, September, 1897 (*W. Hunter*); native of Eur. and Asia; naturalized locally in the northeastern U. S. *A. hispida* (L.) Willd. (*Leontodon hispidus* L.), common hawkbit, native of Eur., was collected at Ammendale, May, 1916 (*Brother Arsène*).

Hypochaeris radicata L., cat's-ear, was collected at Ammendale, June, 1916 (*Brother Hyacinth*). Native of Eur.; widely naturalized in the U. S.

4. LEONTODON L.

Achenes greenish brown; heads 3–5 cm. broad; bracts green, the outer ones reflexed, without cylindric appendages at the tips; pappus white.......**1. L. taraxacum.**

Achenes red or reddish brown; heads 2–3 cm. broad; bracts erect or ascending, with cylindric appendages at the tips; pappus dirty white.....**2. L. erythrospermum.**

1. Leontodon taraxacum L. COMMON DANDELION.

Waste ground, open fields, and lawns; very abundant. Apr.–June. Native of Eur. and Asia; naturalized nearly throughout N. Amer.; perhaps native in the western U. S. (*Taraxacum officinale* Weber; *T. taraxacum* Karst.; *T. dens-leonis* Desf.)

The plants may be found in flower at nearly any time of the year, even in midwinter if there are a few warm days. The leaves are much used for "greens." Plants with branched scapes occur occasionally; in one collected in the Department of Agriculture grounds in 1893, the outermost bracts have assumed the form of leaves 1–2.5 cm. long.

2. Leontodon erythrospermum (Andrzej.) Britton. RED-SEEDED DANDELION.

Waste ground; frequent. Apr.–Aug. Native of Eur.; widely naturalized in N. Amer. (*Taraxacum erythrospermum* Andrzej.)

5. CHONDRILLA L.

1. Chondrilla juncea L. SKELETON-WEED.

Waste and cultivated ground; common. May–Oct. Native of Eur.; naturalized from Del. to Va.

This plant is often very abundant in Maryland and Virginia, but in spite of the adaptation of its seeds to dispersal by wind and other means, it has not spread to other parts of the United States.

6. PRENANTHES L.

Pappus deep reddish brown; involucre glabrous, cylindric................**1. P. alba.**

Pappus pale brown; involucre usually bearing a few long hairs, the bracts abruptly spreading above the middle..................................**2. P. serpentaria.**

1. Prenanthes alba L. RATTLESNAKE-ROOT.

Moist or dry woods; common. Sept.–Oct. Eastern U. S. (*Nabalus albus* Hook.)

The lower leaves vary from ovate and shallowly toothed to hastate or deeply lobed.

2. Prenanthes serpentaria Pursh. LION'S-FOOT.

Dry or moist woods and fields; common. Aug.–Oct. Eastern U. S. (*Nabalus serpentarius* Hook.; *N. fraseri* DC.)

The leaves vary as in the preceding species. A form with merely dentate lower leaves, described as *Nabalus integrifolius* Cass., is of frequent occurrence.

7. SONCHUS L. SOW THISTLE.

Achenes ribbed and transversely wrinkled; auricles at the base of the stem leaves acute..**1. S. oleraceus.**

Achenes ribbed but not transversely wrinkled; auricles of the stem leaves rounded. **2. S. asper.**

1. Sonchus oleraceus L.

Waste ground; frequent. June–Oct. Native of Eur.; naturalized in nearly all cultivated parts of the earth.

2. Sonchus asper (L.) Hill.

Waste ground; frequent. June–Sept. Native of Eur.; naturalized throughout most cultivated parts of the earth.

8. LACTUCA L. LETTUCE.

Achenes rounded at the apex or narrowed into a short stout beak; flowers blue or white.

Pappus brown. Achenes with a very short beak; leaves usually deeply lobed. **1. L. spicata.**

Pappus white.

Achenes distinctly beaked; leaves deeply lobed................**2. L. floridana.**

Achenes not beaked; leaves merely toothed....................**3. L. villosa.**

Achenes tapering or abruptly contracted to a slender, usually long beak; flowers usually yellow, sometimes blue.

Teeth of the leaves spine-tipped. Flowers yellow, 6–12 in each head.

Leaves deeply lobed....................................**4. L. scariola.**

Leaves finely toothed....................................**5. L. virosa.**

Teeth of the leaves not spine-tipped.

Leaves hairy or bristly on the veins beneath; flowers blue or purplish.

Stems long-hairy throughout; leaves merely toothed..............**6. L. steelei.**

Stems glabrous above; leaves nearly all deeply lobed............**7. L. hirsuta.**

Leaves glabrous; flowers yellow.

Leaves entire or lobed, not clasping at the base.............**8. L. canadensis.**

Leaves entire or finely toothed, clasping at the base........**9. L. sagittifolia.**

1. Lactuca spicata (Lam.) Hitchc. BLUE LETTUCE.

Woods; Plummers Island and Terra Cotta. Aug. Eastern N. Amer., west to Colo. (*Mulgedium spicatum* DC.)

The flowers are usually blue, but in a specimen from Plummers Island (*Kearney* 133) they are cream-colored.

Lactuca spicata integrifolia (A. Gray) Britton is a form in which most of the leaves are merely dentate; in the typical form they are usually deeply lobed. The subspecies has been collected near Langley and St. Elmo.

2. Lactuca floridana (L.) Gaertn. FLORIDA LETTUCE.

Woods or open fields; common. Aug.–Sept. Eastern U. S. (*Mulgedium floridanum* DC.)

3. Lactuca villosa Jacq.

Woods; frequent. Aug.–Sept. Eastern U. S. (*Mulgedium acuminatum* DC.)

4. Lactuca scariola L. PRICKLY LETTUCE.

Waste ground; occasional; apparently a recent introduction. Native of Eur.; frequently adventive in the U. S., but much less common than the next.

5. Lactuca virosa L. PRICKLY LETTUCE.

Waste ground about Washington. May–Aug. Native of Eur.; widely naturalized in the U. S., and often a pernicious weed. (*L. scariola integrata* Gren. & Godr.)

6. Lactuca steelei Britton.

The type was collected at Chevy Chase, Maryland, July 22, 1897 (*Steele*); found also at Anacostia and Falls Church. Britton reports the species, doubtfully, from Del.

7. Lactuca hirsuta Muhl.

Moist woods and thickets; frequent. July–Aug. Eastern N. Amer.

8. Lactuca canadensis L.

Woods and thickets; frequent. June–Aug. Widely distributed in N. Amer.

9. Lactuca sagittifolia Ell.

Woods; occasional. July–Sept. Eastern N. Amer., west to Idaho. (*L. integrifolia* Bigel.)

9. HIERACIUM L.

Leaves acute or acuminate, glabrous, glaucous beneath; heads small, 12–20-flowered, on long slender stalks, loosely panicled........................**1. H. paniculatum.**

Leaves obtuse or rounded at the apex, copiously hairy; heads larger, the flowers usually 20–50.

Stems hairy throughout, bearing numerous leaves, without a basal tuft of leaves at flowering time; heads in narrow panicles or corymbs.

Inflorescence leafy-bracted, the heads on very stout stalks, 40–50-flowered. **2. H. scabrum.**

Inflorescence not leafy-bracted, the heads on comparatively slender stalks, 15–20-flowered..**3. H. gronovii.**

Stems glabrous except sometimes at the base, bearing only one or two leaves, with a rosette of basal leaves at flowering time, these usually veined or mottled with purple; heads in open panicles, on very slender stalks.........**4. H. venosum.**

1. Hieracium paniculatum L.

Woods about Washington. Aug.–Oct. Eastern N. Amer.

2. Hieracium scabrum Michx. ROUGH HAWKWEED.

Dry woods; common. Aug.–Oct. Eastern N. Amer.

3. Hieracium gronovii L. HAIRY HAWKWEED.

Dry woods and open fields; common. Aug.–Oct. Eastern U. S.

4. Hieracium venosum L. RATTLESNAKE-WEED.

Dry woods; abundant. Apr.–Sept. Eastern U. S. (Including *H. venosum subcaulescens* of Ward's Flora.)

Crepis pulchra L. was found in waste ground near the Washington Monument in 1898 and 1899. Native of Eur. *C. capillaris* (L.) Wallr. (*C. virens* L.), also a European species, was collected in the Department of Agriculture grounds as early as 1872 and as late as 1894, but is not established in our region.

152. AMBROSIACEAE. Ragweed Family.

Fruit covered with very numerous long, usually hooked spines; leaves alternate. **1. XANTHIUM.**

Fruit bearing usually 4–8 short tubercles; leaves all or only the lower ones opposite. **2. AMBROSIA.**

1. XANTHIUM L. COCKLEBUR.

Stems armed in the axils with branched spines; leaves lanceolate, white beneath; fruit with one short beak or beakless.............................**1. X. spinosum.**

Stems without spines; leaves broadly ovate or broader, green on both sides; fruit with 2 long beaks at the apex.

Body and prickles of the fruit glabrous or puberulent, the beaks straight or nearly so. **2. X. americanum.**

Body and prickles of the fruit hairy, the beaks incurved..........**3. X. commune.**

1. Xanthium spinosum L. SPINY COCKLEBUR.

Occasional in waste ground about Washington and Alexandria. Aug.–Oct. Native of Eurasia; adventive in N. Amer.

2. Xanthium americanum Mill.

Waste or cultivated ground or alluvial flats. Aug.–Oct. Eastern N. Amer. (*X. canadense* of Gray's Manual; *X. glabratum* Britton.)

3. Xanthium commune Britton.

Alluvial soil along the Potomac and its larger tributaries. Aug.–Oct. Widely distributed in N. Amer.

2. AMBROSIA L.

Leaves opposite and alternate, once or twice lobed; receptacle chaffy; plants usually low, seldom over 1 meter high.................................**1. A. elatior.**

Leaves all, except the uppermost among the inflorescence, opposite, palmately 3 or 5-lobed, or often undivided; receptacle not chaffy; plants usually 1.5–2 meters high.

Leaves mostly 3–5-lobed..**2. A. trifida.**

Leaves not lobed..**2a. A. trifida integrifolia.**

1. Ambrosia elatior L. COMMON RAGWEED.

Waste and cultivated ground and roadsides: abundant. Aug.–Oct. Nearly throughout the U. S. (*A. artemisiaefolia* L.)

The abundant pollen of this plant is one of the chief causes of hay fever.

2. Ambrosia trifida L. GREAT RAGWEED.

Damp soil near streams; abundant. Aug.–Sept. Eastern N. Amer.

Known also as horseweed.

2a. Ambrosia trifida integrifolia (Muhl.) Torr. & Gray.

With the typical form.

153. ASTERACEAE. Aster Family.

In this family, as well as in the Ambrosiaceae and Cichoriaceae (all three of which are often united as the Compositae), the form of the inflorescence is conspicuously different from that of our other flowering plants, so much so as often to deceive amateurs, who mistake the head of flowers for a single flower. The flowers are borne in a close head (except in the pistillate inflorescence of Ambrosiaceae) upon a flat or convex *receptacle*, the latter often bearing *chaff* among the flowers. The head is surrounded by an *involucre* of *bracts*. The corolla is tubular or strap-shaped. In the Cichoriaceae all the flowers are strap-shaped. In the Asteraceae all the flowers may be tubular, but more frequently the outer ones, or *rays*, are strap-shaped, while the inner (forming the disk) are tubular. The fruit is an acheme. The calyx tube is united with the fruit, while the calyx limb is represented by bristles, awns, scales, etc., called the *pappus*.

A. Outer flowers of the heads never with strap-shaped (ray) corollas, the corollas with 5 equal or nearly equal lobes, or the corollas of the outer flowers sometimes larger than those of the inner ones.

Leaves opposite or whorled.

Fruit covered with numerous slender hooked spines. (Ray flowers are present in this genus but they are so small as to be overlooked easily.) **23. ACANTHOSPERMUM.**

Fruit never with hooked spines.

Flowers yellow or yellowish; involucre of 2 distinct series of bracts, the outer ones green, the inner brownish or straw-colored. Leaves often lobed or composed of several leaflets.

Plants with viscid pubescence; pappus none...............**22. POLYMNIA.**

Plants never with viscid pubescence; pappus of 2–6 long slender barbed awns...**34. BIDENS.**

Flowers white, purplish, or blue; bracts all alike or similar.

Stems climbing; bracts 4.....................................**4. MIKANIA.**

Stems erect; bracts more than 4...........................**3. EUPATORIUM.**

Leaves alternate.

B. Leaves with spiny teeth, or the bracts armed with hooked spines, or deeply toothed. Plants usually with more or less woolly pubescence.

Bracts ending in hooked spines. Leaves mostly borne at the base of the stem, very large, not spine-toothed............................**47. ARCTIUM.**

Bracts ending in straight spines or sometimes not spiny.

Flower heads small, the body of the involucre less than 1 cm. thick, the bracts merely toothed or else ending in very stout spines longer than the involucre; plants usually low annuals; scar of insertion of the fruit on the side just above the base........................**50. CENTAUREA.**

Flower heads usually large, the body of the involucre commonly 2–5 cm. thick or, if small, the bracts ending in short slender spines; plants usually very large and stout, biennials or perennials; scar of insertion of the fruit basal.

Pappus bristles feather-like (plumose); receptacle bearing numerous bristles..**48. CIRSIUM.**

Pappus bristles smooth or nearly so, not plumose; receptacle without bristles...**49. ONOPORDON.**

BB. Leaves never with spiny teeth, the bracts not armed with spines, not toothed.

Leaves, at least the lower ones, lobed nearly or quite to the midrib; flowers bright yellow or greenish yellow, the heads small. Plants usually strong-scented.

Blades of the upper leaves oblong or ovate, merely shallow-toothed or with a few deep lobes at the base. Flower heads in a usually flat-topped corymb; pappus a short crown................**39. CHRYSANTHEMUM.**

Blades of all the leaves divided into narrow lobes.

Flower heads in a flat-topped corymb, the flowers bright yellow; pappus a short crown....................................**40. TANACETUM.**

Flower heads in long narrow racemes or panicles, the flowers greenish yellow; pappus none..............................**41. ARTEMISIA.**

Leaves entire to coarsely toothed, never lobed nearly to the midrib; flowers white, blue, or purple, or sometimes only whitish, never conspicuously yellow.

Leaves with copious white woolly pubescence. Plants herbaceous; flowers white, in small heads.

Leaves mostly basal, broad and spatulate, those of the stems small and narrow; plants perennial, with long prostrate stolons, often forming mats, the flowering stems simple below, bearing 1 or more heads at or near the summit..............................**20. ANTENNARIA.**

Leaves all borne on the stems, linear or very narrow; plants never with stolons; much branched annuals or winter annuals, never forming mats.

Receptacle of the flower head bearing chafflike scales; leaves crowded, usually erect or appressed to the stems, linear.........**18. GIFOLA.**

Receptacle of the flower head without scales; leaves usually not crowded, spreading or ascending, linear to narrowly spatulate.
21. GNAPHALIUM.

Leaves never with white woolly pubescence.

Plants shrubby. Leaves coarsely toothed, glabrous; flowers white; pappus of the fertile heads of very long bristles.............**17. BACCHARIS.**

Plants herbaceous.

Flower heads collected in dense heads surrounded by leaflike bracts. Plants hairy, with numerous large basal leaves, the flowers bluish, 2–5 in each head..........................**2. ELEPHANTOPUS.**

Flower heads in racemes, spikes, corymbs, or panicles, never in dense heads.

Flower heads in long racemes or spikes; stems simple. Flowers rose-purple, very showy; perennials, more or less pubescent, with narrow entire rigid leaves..........................**6. LACINARIA.**

Flower heads in corymbs or panicles; stems usually conspicuously branched.

Flowers purple or deep purplish. Plants more or less pubescent.
  Leaves with numerous small glands beneath; pappus white, in one series, soft...........................**19. PLUCHEA.**
  Leaves without conspicuous glands beneath; pappus purplish or yellowish, in 2 series, stiff..................**1. VERNONIA.**
Flowers white, whitish, or pale pink.
  Bracts finely pubescent; pappus bristles plumose, brownish; leaves finely gland-dotted beneath.............**5. KUHNIA.**
  Bracts glabrous; pappus bristles smooth or nearly so, white; leaves not gland-dotted beneath.
    Bracts usually 5 (some small ones usually present also at the base of the involucre); flowers usually 5 in each head; leaves often pale beneath, usually as broad as long. **44. MESADENIA.**
    Bracts 12 or more; flowers 20 or more in each head; leaves green on both sides, longer than broad.
      Leaves with 2 very acute lobes at the base; bracts about 1 cm. long; plants perennial.....................**45. SYNOSMA.**
      Leaves tapering at the base; bracts about 1.5 cm. long; plants annual...........................**43. ERECHTITES.**

AA. Outer flowers of the heads produced into a strap-shaped ray (the ray sometimes small), the corollas of the inner flowers with 5 equal lobes.

C. Leaves opposite or whorled, or the uppermost sometimes alternate.
  Stems winged. Rays yellow; leaves ovate, toothed...........**32. VERBESINA.**
  Stems not winged.
    Rays pure white or purplish, small. Flower heads small; plants annual.
      Leaves petioled, broadly ovate; pubescence of the stems spreading; achenes pubescent....................................**35. GALINSOGA.**
      Leaves sessile, narrowly lanceolate; pubescence of the stems appressed; achenes pubescent on the flat apex but glabrous elsewhere. **28. ECLIPTA.**
    Rays yellow, sometimes pale but never white.
      Bracts in 2 distinct series, the inner ones usually thin, brownish or yellowish, the outer ones green, often leaflike.
        Plants with a tuft of basal leaves at flowering time; petioles usually longer than the blades; bracts 10, 5 in each series; plants densely soft-hairy, perennial..................................**25. CHRYSOGONUM.**
        Plants without a tuft of basal leaves at flowering time; petioles shorter than the blades or often wanting; bracts more than 10; plants never densely soft-hairy.
          Pappus none or of 2 very short teeth; leaves each composed of 3 entire leaflets or else divided into numerous linear segments; glabrous perennials....................................**33. COREOPSIS.**
          Pappus of 2-6 barbed awns; leaves simple or pinnate, the blades or the leaflets toothed, never linear; annuals or biennials, often pubescent. **34. BIDENS.**
      Bracts not in 2 distinct series, all alike or the outer ones gradually smaller.
        Fruit covered with hooked spines. Annual with prostrate stems; leaves petioled, toothed; rays very small.......**23. ACANTHOSPERMUM.**
        Fruit never with hooked spines.
          Leaves (except sometimes the uppermost) deeply lobed; plants tall and coarse, with viscid pubescence. Fruit glabrous, without pappus; rays large or very small..................**22. POLYMNIA.**

Leave shallowly toothed or entire; plants never with viscid pubescence.

Bracts all of equal length, in one series; pappus of numerous long soft bristles. Leaves mostly borne at the base of the stem, the stems bearing one or 2 pairs of sessile opposite leaves and a few reduced alternate ones about the inflorescence.....**42. ARNICA.**

Bracts unequal, the outer ones shorter, in more than one series; pappus never of long bristles.

Leaves mostly in whorls of 3 or 4; inner flowers of the head sterile, not producing fruit. Tall perennials with glabrous stems. **24. SILPHIUM.**

Leaves opposite by 2's, never whorled; all the flowers fertile and producing fruit.

Bracts obtuse or rounded at the apex; rays papery and persisting on the fruit; perennials with petioled leaves. **27. HELIOPSIS.**

Bracts acute or long-pointed; rays thin and usually soon falling from the fruit; perennials or annuals.....**30. HELIANTHUS.**

CC. Leaves alternate.

Stems narrowly or broadly winged.

Leaves with numerous oil glands; rays much broadened near the apex, deeply 3-lobed; fruit neither flattened nor winged, the pappus of 5–8 scales. **36. HELENIUM.**

Leaves without oil glands; rays narrowed at the apex, shallowly toothed or entire; fruit flattened, broadly winged, the pappus of 2 slender awns. **31. RIDAN.**

Stems not winged.

D. Rays yellow, the inner flowers of the head yellow, brown, or purple.

Teeth of the leaves ending in short stiff spinelike hairs; bracts very viscid. **7. GRINDELIA.**

Teeth of the leaves never ending in spinelike hairs, the leaves often entire; bracts very slightly if at all viscid.

Leaves, at least some of them, deeply lobed or divided.

Bracts equal, in one series, a few very small ones sometimes present at the base of the involucre; pappus of numerous soft white bristles. **46. SENECIO.**

Bracts very unequal, the outer gradually shorter; pappus none or a minute crown.................................**29. RUDBECKIA.**

Leaves entire or toothed, never lobed or divided.

Pappus of a few teeth or short awns or wanting; flower heads large, with very large and showy rays.

Bracts reflexed; receptacles of the flower heads conical, 1–1.5 cm. broad; disk flowers dark purple; leaves broader than linear. **29. RUDBECKIA.**

Bracts erect or appressed; receptacles of the flower heads flat or somewhat convex, often 5 cm. broad or even larger; disk flowers often yellow; leaves linear to broadly ovate-cordate. **30. HELIANTHUS.**

Pappus of numerous slender bristles; flower heads large or often very small.

Pappus in 2 series, the inner of long soft brownish bristles, the outer of very short stiff bristles; heads about 1 cm. high, the rays nearly or quite 1 cm. long; pubescence of the leaves of very long silky appressed hairs, often deciduous...............**8. CHRYSOPSIS.**

Pappus of a single series of long soft bristles; heads usually less than 7 mm. high, the rays much less than 1 cm. long; pubescence of the leaves never of long appressed silky hairs.

Leaves all linear or nearly so, entire; flower heads in a flat-topped corymb; receptacle of the flower head hairy or bristly; ray flowers more numerous than the disk flowers..**10. EUTHAMIA.**

Leaves, at least some of the lower ones, broader than linear, usually toothed; flower heads usually in a long narrow panicle or in a pyramidal panicle or in clusters in the axils of the leaves; receptacle of the flower head usually pitted and not hairy or bristly; ray flowers usually not more numerous than the disk flowers. **9. SOLIDAGO.**

DD. Rays never yellow, usually white or purple.

Leaves, at least most of them, divided nearly or quite to the midrib into numerous lobes. Rays usually white; plants often strong-scented.

Heads very small, very numerous, on short stalks in dense corymbs, the involucres about 3 mm. wide, the rays about 2 mm. long; perennials with basal tufts of soft, much divided, plumelike leaves. **37. ACHILLEA.**

Heads larger, usually solitary on long stalks, the involucres 6–15 mm. broad, the rays mostly 14–20 mm. long; annuals or perennials, never with basal tufts of soft plumelike leaves.

Receptacles of the flower heads bearing numerous chafflike scales; plants annual or sometimes biennial, without basal tufts of leaves at time of flowering..................................**38. ANTHEMIS.**

Receptacles of the flower heads naked, without scales; plants perennial, usually with basal tufts of leaves at time of flowering. **39. CHRYSANTHEMUM.**

Leaves entire or toothed, never lobed.

Pappus of 2 or 3 very inconspicuous scales. Flower heads about 5 mm. broad, in a flat-topped corymb; rays white, very small; leaves broad, harsh to the touch, with short rough pubescence.**26. PARTHENIUM.**

Pappus of numerous long slender bristles.

Rays small, equaling or usually shorter than the diameter of the involucre, not exceeding 3 mm. in length, white or tinged with pink.

Plants annual; leaves linear or nearly so; bracts linear, very acute. **16. LEPTILON.**

Plants perennial; leaves lance-oblong to obovate; bracts broader than linear, obtuse..**9. SOLIDAGO.**

Rays large and showy, longer than the diameter of the involucre, usually much more than 3 mm. long.

Bracts nearly equal in length, in one or 2 series, narrowly linear, very numerous. Rays white, pink, or purplish; pappus bristles equal, in one series.....................................**15. ERIGERON.**

Bracts very unequal, the outer shorter, in several series, either broad or, if very narrow, evidently broadest at the base.

Pappus bristles in 2 series, the outer ones shorter than the inner.

Rays white; leaves broader than linear...**13. DOELLINGERIA.**

Rays violet; leaves linear........................**14. IONACTIS.**

Pappus bristles in one series, equal or somewhat unequal.

Rays 4 or 5, white; involucres much longer than thick. Bracts broad, obtuse, cartilaginous.........**11. SERICOCARPUS.**

Rays numerous; involucres usually nearly as broad as long. **12. ASTER.**

1. **VERNONIA** Schreb. IRON-WEED.

Pappus purplish; bracts with long slender tips; leaves elongate-lanceolate or narrowly lance-oblong, gradually narrowed at the base............1. **V. noveboracensis.**

Pappus yellowish; bracts with short stout tips; leaves ovate-lanceolate, usually abruptly narrowed at the base..................................2. **V. glauca.**

1. **Vernonia noveboracensis** (L.) Willd.
Woods and open fields. Aug.–Sept. Eastern U. S.

2. **Vernonia glauca** (L.) Britton.
Woods and open fields. July–Oct. Eastern U. S.

2. **ELEPHANTOPUS** L.

1. **Elephantopus carolinianus** Willd. ELEPHANT'S-FOOT.
Dry or moist woods; common. Aug.–Oct. Eastern U. S.
Flowers pale purplish, in small, narrow, crowded heads.

3. **EUPATORIUM** L.

Besides the species listed below, two others have been found here as immigrants, but are probably not established: *E. capillifolium* (Lam.) Small, with leaves dissected into filiform lobes, native farther south, was collected near Chain Bridge, Va., Oct. 13, 1912 (*Albert Ruth*); *E. cannabinum* L., native of Europe, with 3-lobed leaves, was found along Hunting Creek, Sept. 4, 1899 (*Steele;* a single plant).

Flowers pink or purplish; leaves all or mostly in whorls of 3–7, petioled. Plants tall and coarse; bracts imbricate in several rows.....................1. **E. purpureum.**

Flowers white, or in one species blue or violet; leaves mostly opposite, sometimes in whorls of 3 or 4, but then usually sessile, the uppermost leaves sometimes alternate.

Leaves conspicuously petioled.

Flowers blue or violet; bracts with violet tips..............14. **E. coelestinum.**

Flowers white; bracts with greenish or whitish tips.

Leaves with minute resin dots, the uppermost leaves alternate; involucre with several small bracts at the base, the large bracts mostly truncate at the apex...8. **E. serotinum.**

Leaves without resin dots, all opposite; involucre with few or no small bracts at the base, the long bracts obtuse or acute.

Leaves thin, the blades mostly 3.5–8 cm. wide, the tips long-tapering, the teeth acute; petioles mostly 2.5–5 cm. long........12. **E. urticaefolium.**

Leaves thickish, the blades mostly 3–5 cm. wide, acute to very obtuse, not long-tapering, the teeth usually very obtuse; petioles mostly 0.5–1.5 cm. long...13. **E. aromaticum.**

Leaves sessile or nearly so.

Leaves perfoliate (the bases united around the stem)........2. **E. perfoliatum.**

Leaves not perfoliate, the bases distinct.

Leaves narrowed and acute at the base, or in one species the base often obtuse, but the blades then broadest at or near the middle.

Bracts all or mostly very acute, with conspicuous white scarious tips; larger leaves often 2.5–3.5 cm. wide.............................4. **E. album.**

Bracts obtuse or rounded at the apex, not whitish or with a very narrow scarious border; leaves all or mostly less than 2 cm. wide.

Leaves linear, mostly 1.5–5 mm. wide, entire or the larger ones serrate, many of them in whorls of 3 or 4................9. **E. hyssopifolium.**

Leaves lance-linear to lanceolate, mostly 7–20 mm. wide, all or most of them serrate.

Leaves lance-linear, many of them in whorls of 3, the larger ones 7–12 mm. wide, the lateral nerves not very conspicuous.....**10. E. torreyanum.**

Leaves lanceolate or narrowly lanceolate, opposite, the larger ones mostly 12–20 mm. wide, the lateral nerves very conspicuous. **11. E. altissimum.**

Leaves obtuse to truncate at the base, the blades broadest at or near the base.

Leaves glabrous beneath, often 5 times as long as broad, very long-tapering at the apex; bracts obtuse........................**3. E. sessilifolium.**

Leaves pubescent beneath, the blades less than 3 times as long as broad, the larger ones never very long-tapering at the apex, usually obtuse or acute; bracts acute or acutish.

Leaves mostly 2.5–3 times as long as broad, ovate, ovate-oblong, or lance-oblong, with few coarse irregular teeth; leaves of the inflorescence alternate...................................**5. E. verbenaefolium.**

Leaves less than twice as long as broad, broadly ovate or rounded-ovate, with numerous close even teeth, or the lower leaves sometimes irregularly lobed; leaves of the inflorescence all or nearly all opposite.

Leaves broadly ovate, acute or acutish, the larger ones 6–9 cm. long, usually rounded at the base.....................**6. E. pubescens.**

Leaves rounded-ovate, usually obtuse, the larger ones mostly 3–5 cm. long but sometimes longer, usually truncate at the base. **7. E. rotundifolium.**

1. Eupatorium purpureum L. JOE PYE WEED.

Low wet ground or in moist woods or ravines; frequent. Aug.–Sept. Eastern N. Amer. (*E. trifoliatum* L.)

A somewhat variable species. In shaded woodlands the plants have thinner, sparsely pubescent leaves. The common form, of exposed situations, has thicker, more pubescent leaves, but does not differ essentially from the woodland form. It is *E. purpureum maculatum* (L.) Darl. (*E. maculatum* L.).

2. Eupatorium perfoliatum L. BONESET.

Low wet ground; common. Aug.–Sept. Eastern U. S.

The leaves are usually opposite, but sometimes in whorls of 3.

3. Eupatorium sessilifolium L. UPLAND BONESET.

Wooded hillsides; common. Aug.–Sept. Eastern U. S.

In specimens collected near Takoma Park by Steele the leaves are very shortly petiolate, and obtuse, rather than rounded, at the base.

Ward reported a hybrid between this species and *E. pubescens*. This form, which is represented by several specimens, has pubescent leaves intermediate in shape between those of the two species. In the key it is likely to fall under *E. verbenaefolium*, from which it is distinguished by the thinner, closely and evenly serrate leaves.

4. Eupatorium album L.

Dry fields; common, especially on the Coastal Plain. July–Sept. Eastern U. S., northward to Long Isl.

5. Eupatorium verbenaefolium Michx.

Low ground, often in sphagnum bogs, or in dryish fields; Coastal Plain. Aug.–Sept. Eastern U. S. (*E. teucrifolium* Willd.)

6. Eupatorium pubescens Muhl.

Woods; chiefly along the upper Potomac, but also on the Coastal Plain. Aug.–Sept. Eastern U. S.

Closely related to *E. rotundifolium;* some specimens can be placed almost equally well in either species. The lowest leaves are often deeply lobed in both species.

7. **Eupatorium rotundifolium** L.

Open low ground or in woods; Coastal Plain. July–Sept. Eastern U. S.

8. **Eupatorium serotinum** Michx.

Found only at Hickeys Hill, Eastern Branch, Sept., 1899 (*Steele*). Eastern U. S.

9. **Eupatorium hyssopifolium** L.

Sandy fields; common, especially on the Coastal Plain. Aug.–Sept. Eastern U. S.

10. **Eupatorium torreyanum** Short.

Dry fields; frequent. Aug.–Sept. Pa. and southward. (*E. hyssopifolium* of Ward's Flora, in part.)

11. **Eupatorium altissimum** L.

Dry soil; Piedmont Region. Aug.–Sept. Eastern U. S.

12. **Eupatorium urticaefolium** Reich. WHITE SNAKEROOT.

Deciduous woods; common. Aug.–Sept. Eastern N. Amer. (*E. ageratoides* L. f.)

13. **Eupatorium aromaticum** L.

Woods; common. Sept. Eastern U. S.

One specimen from our region has leaves in whorls of 3.

14. **Eupatorium coelestinum** L. MIST-FLOWER.

Low woods or fields; common. July–Oct. Eastern U. S., north to N. J. (*Conoclinium coelestinum* DC.)

4. MIKANIA Willd.

1. **Mikania scandens** (L.) Willd. CLIMBING HEMPWEED.

Swamps or wet ground. Aug.–Sept. Eastern N. Amer. to tropical S. Amer. (*Willughbaea scandens* Kuntze.)

Readily distinguished from all our other Asteraceae by its climbing stems; flowers flesh-colored.

5. KUHNIA L.

1. **Kuhnia eupatorioides** L. FALSE BONESET.

Woods. Sept.–Oct. Eastern U. S.

6. LACINARIA Hill. BLAZING STAR.

Bracts very acute, stiff, with thick firm margins......................**1. L. squarrosa.**
Bracts obtuse or rounded at the apex, with thin scarious margins.
  Heads 1 cm. broad or narrower, often numerous; bracts erect and appressed; leaves linear 7 mm. wide or less..............................**2. L. graminifolia.**
  Heads 1.5–2 cm. broad, few; outer bracts reflexed; leaves lance-oblong, mostly 1.5–4 cm. wide......................................**3. L. scariosa.**

1. **Lacinaria squarrosa** (L.) Hill.

Dry fields near Alexandria, Accotink, and Cropley. July–Aug. Pa. and southward. (*Liatris squarrosa* Willd.)

2. **Lacinaria graminifolia** (Walt.) Kuntze.

Dry fields and open woods of the Coastal Plain; common. Sept.–Oct. Southeastern U. S., north to Md. (*Liatris graminifolia* Pursh.)

3. **Lacinaria scariosa** (L.) Hill.

Hillsides and bluffs of the Piedmont Region, Virginia side of the Potomac. Sept.–Oct. Eastern U. S. (*Liatris scariosa* Willd.)

7. GRINDELIA Willd.

1. **Grindelia squarrosa** (Pursh) Dunal. GUM-PLANT.

Near the mouth of Hunting Creek, August, 1916 (*Miss F. W. Layton*). Native of the western U. S.

Characterized by the very "gummy" heads of yellow flowers.

8. CHRYSOPSIS Ell.

1. Chrysopsis mariana (L.) Ell. GOLDEN ASTER.

Fields or open woods; common, Aug.–Oct. Eastern U. S.

A specimen of *Chrysopsis gossypina* (Michx.) Ell. was collected along the railroad at Silver Springs, Sept. 1904 (*J. H. Painter*). This species ranges from Va. to Fla., and is doubtless adventive here.

9. SOLIDAGO L. GOLDENROD.

Heads in small clusters in the axils of the leaves, the leaves much longer than the clusters; stems glabrous.
  Leaves rounded-ovate, ovate, or broadly elliptic, abruptly narrowed at the base into a winged petiole; teeth of the leaves long, spreading; stem angled. **1. S. flexicaulis.**
  Leaves lanceolate or narrowly oblong-lanceolate, sessile, the teeth low, appressed; stem round........**2. S. caesia.**
Heads all or mostly in broad or narrow panicles, in one species in corymbs, clusters of heads sometimes present also in the axils of some of the leaves; stems glabrous or pubescent.
  Leaves all entire, anise-scented........**8. S. suaveolens.**
  Leaves all or at least the larger ones with large or small teeth, not anise-scented.
    Stems glabrous up to the inflorescence, the branches of the panicle often pubescent.
      Leaves very hairy beneath with long or short hairs, often very rough on the upper surface. Heads in long slender one-sided racemes.
        Leaves 3-nerved, 2 of the lateral nerves much stronger than the others. **16a. S. serotina gigantea.**
        Leaves pinnately nerved, the lateral nerves all alike or nearly so. **10. S. ulmifolia.**
      Leaves glabrous beneath, or rarely with a few scattered hairs along the principal nerves, smooth on the upper surface.
        Margins of the leaves smooth; plants growing on rocks. Heads large, 7–8 mm. long, in very narrow panicles........**7. S. racemosa.**
        Margins of the leaves rough with very short thick hairs; plants growing in soil.
          Heads large, 5.5–8 mm. long (from base of involucre to top of disk), not in one-sided racemes; lower leaves mostly obtuse........**5. S. erecta.**
          Heads smaller, usually decidedly less than 5.5 mm. long, but sometimes 6 mm. long, arranged in one-sided racemes; leaves all very acute.
            Leaves linear-lanceolate, the largest ones 1.3 cm. wide and most of them narrower, 3-nerved; heads about 3.5 mm. high.....**14. S. rupestris.**
            Leaves lanceolate or broader, most of them over 1.5 cm. wide, usually 2–4 cm. wide.
              Leaves 3-nerved (that is, 2 of the lateral nerves much stronger than the others). Heads 3.5–4 mm. high........**16. S. serotina.**
              Leaves pinnately nerved, the lateral nerves all alike.
                Leaves all sessile, mostly ovate or elliptic and less than 3 times as long as broad, rarely longer; plants with stolons. **11. S. elliottii.**
                Leaves, at least the lowest ones, narrowed to winged petioles, usually lanceolate and 4 times as long as broad or often much longer; plants without stolons.
                  Heads 5–5.5 mm. high, the branches of the panicle short (usually 5 cm. or less) and stout; petioles of the lower leaves sheathing the stem........**12. S. neglecta.**

Heads 4–4.5 mm. high, the branches of the panicle long, slender, recurved; petioles not sheathing..............**13. S. juncea.**

Stems pubescent throughout (rarely glabrous at the base) with fine and close or long and spreading hairs.

Leaves 3-nerved (that is, 2 of the lateral nerves very conspicuous), lanceolate or narrowly lanceolate. Heads in slender one-sided racemes.

Heads 3–3.5 mm. high; leaves usually smooth on the upper surface; branches of the panicle slender...............................**15. S. canadensis.**

Heads 4–4.5 mm. high; leaves very rough on the upper surface; branches of the panicle rather stiff and stout.......................**17. S. altissima.**

Leaves pinnately nerved, none of the lateral nerves much more conspicuous than the others.

Rays white. Heads 5–6 mm. long, the branches of the panicle not one-sided, **3. S. bicolor.**

Rays yellow.

Heads 7–10 mm. high; bracts pubescent on the back, conspicuously nerved; leaves very rough, stiff, densely pubescent, the upper ones obtuse.......................................**19. S. rigida.**

Heads 6 mm. high or less; bracts glabrous on the back, not nerved; leaves thin, the upper ones acute.

Leaves pubescent with very minute, close hairs.

Bracts oblong or narrowly oblong, obtuse; heads in one-sided racemes; achenes glabrous...................................**6. S. puberula.**

Bracts linear or narrowly linear, acutish; racemes not one-sided; achenes pubescent...............................**18. S. nemoralis.**

Leaves with long slender spreading hairs on the lower surface.

Heads not in one-sided racemes; leaves not rugose, the lower stem leaves narrowed into winged petioles; plants without stolons. **4. S. hispida.**

Heads in one-sided racemes; leaves more or less rugose, the stem leaves sessile; plants with stolons..........................**9. S. rugosa.**

1. Solidago flexicaulis L.

Shaded bluffs along the upper Potomac. Sept.–Oct. Eastern N. Amer. (*S. latifolia* L.)

2. Solidago caesia L.

Moist or dry woods; common. Sept.–Oct. Eastern N. Amer.

3. Solidago bicolor L. SILVER-ROD.

Dry or moist woods; common. Sept.–Oct. Eastern N. Amer.

Readily distinguished from our other species by the white rays.

4. Solidago hispida Muhl.

Dry ground; Rock Creek Park; Pinehurst; rare. Sept.–Oct. Eastern N. Amer. (*S. bicolor concolor* Torr. & Gray.)

5. Solidago erecta Pursh.

Wooded ground; common. Sept.–Oct. Eastern U. S., north to N. Y. (*S. speciosa angustata* Torr. & Gray.)

Rays turning white in age.

6. Solidago puberula Nutt.

Open woods; Lanham and Laurel. Sept.–Oct. Eastern N. Amer.

7. Solidago racemosa Greene.

On rocks along the upper Potomac. Aug.–Oct. Newf. to Va. (*S. virga-aurea humilis* A. Gray.)

Usually low and stout, but sometimes a meter high.

8. **Solidago suaveolens** Schoepf. SWEET-SCENTED GOLDENROD.
Sandy woods of the Coastal Plain. July–Sept. Eastern N. Amer. (*S. odora* Ait.)

9. **Solidago rugosa** Mill.
Dry or moist ground; common. Sept.–Oct. Eastern N. Amer. (*S. altissima* of Ward's Flora.)

S. rugosa aspera (Ait.) Fernald (*S. aspera* Ait.) is a form with thick rugose leaves, these often rounded at the base (rather than narrowed, as in the species).

10. **Solidago ulmifolia** Muhl.
Woods; chiefly in the Piedmont Region. Aug.–Sept. Eastern N. Amer.

11. **Solidago elliottii** Torr. & Gray.
Sphagnum bogs of the Coastal Plain. Aug.–Oct. Eastern U. S., near the coast.

12. **Solidago neglecta** Torr. & Gray. SWAMP GOLDENROD.
Sphagnum bogs of the Coastal Plain. Sept.–Oct. Me. to Md. and westward. (*S. stricta* of Ward's Flora.)

13. **Solidago juncea** Ait. EARLY GOLDENROD.
Chiefly in old fields; common. July–Sept. Eastern N. Amer. (*S. arguta* of Ward's Flora.)

14. **Solidago rupestris** Raf.
Along the upper Potomac. Aug.–Sept. Eastern U. S.

15. **Solidago canadensis** L.
Low ground along the upper Potomac. Aug.–Oct. Eastern N. Amer.

16. **Solidago serotina** Ait.
Low ground, among rank weeds; frequent. Aug.–Oct. Widely distributed in N. Amer. (*S. gigantea* of Ward's Flora.)

16a. **Solidago serotina gigantea** (Ait.) A. Gray.
With the typical form; common. July–Aug. Eastern U. S.

17. **Solidago altissima** Ait. TALL GOLDENROD.
Roadsides and borders of fields; common. Aug.–Oct. Eastern U. S. (*S. canadensis* of Ward's Flora.)

18. **Solidago nemoralis** Ait.
Dry fields; common. Sept.–Oct. Eastern N. Amer.

19. **Solidago rigida** L.
Dry fields; Woodley Park and Cabin John; rare. Sept. Eastern U. S., west to Colo. (*Oligoneuron rigidum* Small.)

10. EUTHAMIA Nutt.

1. **Euthamia graminifolia** (L.) Nutt.
Woods and open fields; common. Sept.–Oct. Eastern N. Amer. (*Solidago graminifolia* Salisb.; *S. lanceolata* of Ward's Flora.)

11. SERICOCARPUS Nees. WHITE-TOPPED ASTER.

Leaves entire, linear or linear-spatulate, glabrous or nearly so; involucres 4–7 mm. long; pappus white..**1. S. linifolius.**
Leaves nearly all toothed, usually obovate, pubescent; involucres 5–9 mm. long; pappus rusty..**2. S. asteroides.**

1. **Sericocarpus linifolius** (L.) B. S. P.
Thin woods and open fields; chiefly north and east of Washington. June–Oct. Eastern U. S. (*S. solidagineus* Nees.)

2. **Sericocarpus asteroides** (L.) B. S. P.
Dry woods and open fields; common. June–Sept. Eastern U. S. (*S. conyzoides* Nees.)

12. **ASTER** L.[1] ASTER.

Leaves, at least the lowest ones, petioled, the petioles not winged, the blades more or less cordate at the base (rarely only truncate), usually heart-shaped.

Stem leaves, at least most of them, with sessile clasping bases. Rays pale blue to violet. **6. A. undulatus.**

Stem leaves never with sessile clasping bases, usually petioled, sometimes sessile.

Leaves all entire, 3.5 cm. wide or less, the larger ones more than twice as long as broad. Rays violet-blue..**3. A. shortii.**

Leaves, at least the lower ones, conspicuously toothed, the larger ones much wider, less than twice as long as broad.

Heads panicled; rays usually pale blue. Bracts narrow, with conspicuous, sharply defined, green tips.

Bracts obtuse; involucre about 5 mm. high...............**4. A. cordifolius.**

Bracts very acute; involucre about 6 mm. high.........**5. A. sagittifolius.**

Heads in flat-topped or round-topped corymbs; rays white or pink.

Leaves thin, mostly smooth, the teeth spreading, very acute. **1. A. divaricatus.**

Leaves usually thick and firm, often rough on the upper surface; the teeth low, rounded or very obtuse and abruptly short-pointed..**2. A. schreberi.**

Leaves never both cordate at the base and petioled, sometimes cordate at the base but then sessile.

Stem leaves with a clasping sessile base, or if not very conspicuously clasping at least evidently broadened at the base, or the leaves sometimes with winged petioles and these broadened and clasping at the base.

Stems hairy throughout.

Leaves, at least most of them, conspicuously toothed. Rays lilac-blue to white. **10. A. puniceus.**

Leaves entire.

Heads comparatively small, the disk 8–12 mm. broad; leaves only slightly clasping or merely broadened at the base. Bracts very viscid; rays violet-purple.....................................**9. A. oblongifolius.**

Heads large, the disk 12–16 mm. broad; leaves strongly clasping.

Stem rough with very short or minute hairs; leaves often narrowed just above the base; involucre 6–7 mm. long, the bracts close, with slightly spreading tips; rays mostly blue-purple ....**7. A. patens.**

Stem hirsute with long hairs; leaves not narrowed above the base; involucre 8–10 mm. long, the bracts loose and spreading; rays violet-purple...**8. A. novae-angliae.**

Stems glabrous below, sometimes hairy above.

Lower leaves abruptly contracted into long, narrowly winged petioles, the blades mostly ovate, all of them sharply toothed. Rays violet. **11. A. prenanthoides.**

Lower leaves slightly if at all contracted, the petioles, if any, very broadly winged, the blades oblong to linear, entire or remotely toothed, those of the upper leaves always entire.

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[1] Some of the species of this genus are extremely variable and many of the forms which are regarded by most botanists as mere variants have been described as species. E. S. Burgess, for instance, in his "Species and variations of Biotian Asters" (Mem. Torrey Club **13**. 1906), described about 80 new species of the group represented with us by *A. divaricatus* and *A. schreberi*, but only one of these is accepted in the last edition of Gray's Manual. Many of them were reported from our region, but they appear to be distinguished by unstable characters. A conservative view has been adopted in the present treatment, and the two species mentioned above have been accepted in their usual sense.

Leaves mostly lanceolate or oblong and 1–4 cm. wide; plants somewhat glaucous. Rays blue-violet.............................**12. A. laevis.**

Leaves mostly linear or nearly so and less than 1 cm. wide; plants not glaucous.

Bracts appressed, the tips acutish, the green portion very short; rays violet...**13. A. concinnus.**

Bracts with spreading, usually very obtuse tips, the green portion extending nearly to the base in the outer bracts; rays blue-violet to white. **14. A. novi-belgii.**

Stem leaves with acute or obtuse bases, never clasping or broadened at the base.

Leaves silky-hairy, entire. Rays purple-violet..................**15. A. concolor.**

Leaves never silky-hairy, entire or toothed.

Leaves very thick and rough, the basal ones with winged petioles; heads in corymbs; disk of the head (from base of involucre to top of pappus) 11–14 mm. long. Rays pale violet..............................**16. A. radula.**

Leaves usually thin, never rough, without definite petioles; heads not in corymbs; disk 10 mm. long or usually shorter.

Heads solitary at the ends of slender branches, these bearing very numerous small linear bractlike leaves.

Bracts with rigid tips, the outer bracts very acute; leaves of the flowering branchlets appressed or ascending; rays white or nearly so. **22. A. ericoides.**

Bracts with soft thin tips, the outer bracts obtuse; leaves of the flowering branchlets spreading; rays pale purple or blue.......**19. A. dumosus.**

Heads in broad or narrow racemes or panicles, often clustered, never solitary at the ends of long and densely leafy branches.

Heads large, the disk 7–9 mm. long; panicles broad, not one-sided. Leaves mostly lanceolate and toothed; rays white or purplish. **20. A. paniculatus.**

Heads small, the disk less than 6 mm. long; panicles or racemes long and narrow, often one-sided.

Heads in narrow panicles, these not one-sided. Leaves linear-lanceolate, sharply toothed; rays white or purplish......**21. A. tradescanti.**

Heads in narrow one-sided racemes or panicles.

Leaves mostly lanceolate and conspicuously toothed; rays white or bluish....................................**17. A. lateriflorus.**

Leaves linear or lance-linear, entire or nearly so; rays white. **18. A. vimineus.**

1. Aster divaricatus L. WHITE WOOD ASTER.

Moist woods or thickets; chiefly in the region of Rock Creek and the upper Potomac; frequent. Aug.–Oct. Eastern N. Amer.

2. Aster schreberi Nees.

In ravines or moist woods or thickets, chiefly in the region of Rock Creek and the upper Potomac. July–Oct. Eastern N. Amer. (*A. corymbosus* and *A. macrophyllus* of Ward's Flora.)

3. Aster shortii Hook.

Wooded banks and islands of the upper Potomac; rare. Sept.–Oct. Pa. to Wis. and southward.

4. Aster cordifolius L. BLUE WOOD ASTER.

Low woods and thickets; along the Potomac from Georgetown westward; common. Sept.–Oct. Eastern N. Amer.

5. **Aster sagittifolius** Willd.

Woods along the Potomac from Georgetown westward. Sept.–Oct. Eastern N. Amer.

6. **Aster undulatus** L.

Dry or moist woods, thickets, or hillsides; common. Sept.–Oct. Eastern N. Amer.

A variable species of which numerous segregates have been proposed, based chiefly on the form of leaves and inflorescence. It seems better, however, to treat these slight variations as forms of one readily recognizable species.

7. **Aster patens** Ait.

Dry woods or thickets or open fields; common. Sept.–Oct. Eastern U. S.

A. patens phlogifolius Nees (*A. phlogifolius* Muhl.) is a form with thinner, often larger, less rough leaves than the species. It does not seem to differ essentially, at least in our range, although it has often been recognized as a distinct species.

8. **Aster novae-angliae** L. NEW ENGLAND ASTER.

Moist thickets and fields along the upper Potomac; infrequent. Sept.–Oct. Widely distributed in the U. S. and Can.

9. **Aster oblongifolius** Nutt.

On rocks and exposed slopes along the upper Potomac. Sept.–Oct. Pa. to Minn. and southward.

10. **Aster puniceus** L. RED-STALKED ASTER.

Swamps and low ground; frequent. Sept.–Oct. Eastern N. Amer.

11. **Aster prenanthoides** Muhl.

Ravines or moist woods along the upper Potomac; Hunting Creek; infrequent. Sept.–Oct. Eastern U. S., south to Va.

12. **Aster laevis** L. SMOOTH ASTER.

In woods; northward and eastward; rare. Sept. Widely distributed in the U. S. (*A. laevis potomacensis* Burgess.)

13. **Aster concinnus** Willd.

Woodley Park, in 1878 (*Ward*). Eastern U. S.

Our material perhaps not essentially different from the preceding species.

14. **Aster novi-belgii** L.

Swamps or low ground, eastward. Sept.–Oct. Eastern N. Amer. (*A. aestivus* of Ward's Flora.)

15. **Aster concolor** L. SILVER ASTER.

Dry soil, northeastward; also near Barcroft; infrequent. Sept.–Oct. Eastern U. S.

16. **Aster radula** Ait.

Powdermill Bogs and near Suitland. Aug.–Sept. Eastern N. Amer., south to Md.

17. **Aster lateriflorus** (L.) Britton. CALICO ASTER.

Dry or moist fields and thickets; common. Sept.–Oct. Eastern N. Amer. (*A. diffusus* Ait.; *A. miser* Nutt.; *A. hirsuticaulis* Lindl.)

Variable in pubescence and form of inflorescence. The most copiously pubescent form is *A. lateriflorus hirsuticaulis* (Lindl.) Porter.

18. **Aster vimineus** Lam.

Moist soil; frequent. Sept.–Oct. Eastern N. Amer. (*A. tradescanti* of Ward's Flora, in part.)

19. **Aster dumosus** L.

Fields or open woods; northward and eastward. Aug.–Oct. Eastern N. Amer.

20. Aster paniculatus Lam.

Low ground; chiefly along the Potomac, but also northeastward. Aug.-Oct. Eastern N. Amer. (*A. simplex* of Ward's Flora.)

21. Aster tradescanti L.

Rock Creek region and perhaps elsewhere. Sept.-Oct. Eastern U. S., south to Va.

Our form may not be essentially different from *A. lateriflorus.*

22. Aster ericoides L.

Dry or moist fields and hillsides; common. Sept.-Oct. Eastern N. Amer.

13. DOELLINGERIA Nees.

Achenes pubescent; involucres about 4 mm. long; leaves lanceolate or ovate. **1. D. umbellata.**

Achenes glabrous; involucres 6–7 mm. long; lower leaves often obovate..**2. D. infirma.**

1. Doellingeria umbellata (Mill.) Nees.

Dry or moist fields or woods; common. July-Oct. Eastern N. Amer. (*Aster umbellatus* Mill.; *Diplopappus umbellatus* Hook.)

2. Doellingeria infirma (Michx.) Greene.

Dry or moist fields and woods; frequent. July-Oct. Eastern U. S. (*Aster infirmus* Michx.; *Diplopappus cornifolius* Less.)

14. IONACTIS Greene.

1. Ionactis linariifolius (L.) Greene.

Dry or rocky woods; common. Sept.-Oct. Eastern U. S. (*Aster linariifolius* L.; *Diplopappus linariifolius* Hook.)

A handsome plant, resembling an Aster, with showy violet rays; leaves linear and rather stiff.

15. ERIGERON L.

Plants perennial; stem leaves sessile and usually clasping; rays commonly bluish purple or pink.
  Plants producing slender stolons; heads 12–18 mm. broad; rays about 50; leaves densely long-hairy..**1. E. pulchellus.**
  Plants without stolons; heads about 10 mm. broad; rays very numerous, 100 or more; leaves nearly glabrous..................................**2. E. philadelphicus.**
Plants annual or biennial; stem leaves, at least the lower ones, petioled; rays very numerous, usually white, sometimes pinkish.
  Pubescence of the stems composed of few long soft spreading hairs; leaves coarsely and sharply toothed, the lower ones ovate or oval..............**3. E. annuus.**
  Pubescence of the stems composed of short appressed hairs; leaves entire or very obscurely and remotely toothed, the lower ones oblanceolate...**4. E. ramosus.**

In the National Herbarium there is a specimen of *Erigeron vernus* (L.) Torr. & Gray said to have been collected in the vicinity of Washington by Gerald McCarthy; probably it is wrongly labeled.

1. Erigeron pulchellus Michx. ROBIN'S PLANTAIN.

Woods and meadows; common. Apr.-May. Eastern U. S. (*E. bellidifolius* Muhl.)-

A colony of flowering plants is shown in plate 41B.

2. Erigeron philadelphicus L. FLEABANE.

Fields and wet meadows along the Potomac; frequent. May-June. Nearly throughout the U. S. and Can.

3. Erigeron annuus (L.) Pers. WHITE-TOP.

Fields; very abundant. June-Oct. Eastern N. Amer.

4. **Erigeron ramosus** (Walt.) B. S. P. DAISY FLEABANE.

Fields; common. May–Oct. Widely distributed in the U. S. and Can. (*E. strigosus* Muhl.)

16. LEPTILON Raf.

1. **Leptilon canadense** (L.) Britton. HORSEWEED.

Waste and cultivated ground; very abundant. Aug.–Sept. A common weed in cultivated and waste ground nearly throughout N. Amer. (*Erigeron canadensis* L.)

Flowers white, in very numerous small heads. The minute rays are likely to be overlooked.

17. BACCHARIS L.

1. **Baccharis halimifolia** L. GROUNDSEL BUSH.

Collected at Little Falls, Accotink, near Cabin John, and at Bennings; rare. Along the coast, Mass. to Tex.; W. Ind.

18. GIFOLA Cass.

1. **Gifola germanica** (L.) Dumort. HERBA IMPIA.

Collected at Mount Vernon, Occoquan Creek, and on High Island. May–Sept. Native of Eur.; naturalized in the eastern U. S. (*Filago germanica* L.)

19. PLUCHEA Cass.

1. **Pluchea camphorata** (L.) DC. MARSH FLEABANE.

In marshes; Mount Vernon and Marshall Hall. Aug.–Sept. Mass. to Mex.

A coarse annual, with small clustered heads of purplish flowers.

20. ANTENNARIA Gaertn. EVERLASTING. PUSSY-TOES.

Inflorescence consisting of a single head. Stem very slender, with a few appressed linear leaves.................................**1. A. solitaria.**

Inflorescence consisting of several or numerous heads, those of the pistillate plants in corymbs or racemes.

Plants relatively small; mature basal leaves mostly 1.5–4 cm. long, 5–10 mm. broad, with only the midvein conspicuous above.

Stolons mostly short, leafy throughout, forming broad mats; leaves obovate, abruptly wedge-shaped to the narrowly winged petiole......**2. A. neodioica.**

Stolons long, slender, with well-developed leaves only at the tip; leaves oblanceolate, often broadly so, passing gradually into the broadly winged petiole. **3. A. neglecta.**

Plants much larger and stouter; mature basal leaves of pistillate plants 5–12 cm. long, 2–4 cm. broad, with 3 well-defined main nerves evident above.

Upper surface of basal leaves bright green, usually glabrous at all stages, sometimes slightly cobwebby when young......................**4. A. arnoglossa.**

Upper surface of basal leaves dull green, closely covered with a thin tomentum, this partially persistent to the following year.

Plants very robust; mature basal leaves 2–4 cm. broad; pistillate inflorescence subcapitate or densely corymbose, the heads averaging about 1 cm. high. **5. A. fallax.**

Plants comparatively slender; mature basal leaves narrower (1.5–3 cm. broad); pistillate inflorescence loosely corymbose (often diffusely so with age), the heads averaging about 8 mm. high...................**6. A. plantaginifolia.**

1. **Antennaria solitaria** Rydb.

Damp sterile rocky banks, usually in the shade of beeches; several localities, mostly from Rock Creek Park eastward. May. Pa. to Ohio, south to the Gulf states.

2. **Antennaria neodioica** Greene.

Open fields, brushy banks, and open woods, often under pines; fairly common throughout. May. Northeastern N. Amer.

The local form, described as *A. alsinoides* Greene, does not seem specifically distinct.

3. **Antennaria neglecta** Greene.

Pastures, old fields, meadows, and roadside banks; abundant throughout. Apr.–May. Northeastern N. Amer., south to Va.

The staminate plants mostly precede the pistillate.

4. **Antennaria arnoglossa** Greene.

Open or partially shaded grassy slopes or old meadows, occasionally in damp thickets; abundant. May. N. Eng. to Va. and westward.

Staminate plants are rare. This species was described from local material; it may not be separable from *A. parlinii* Fernald.

5. **Antennaria fallax** Greene.

Open, moist or dryish fields or pastures or at border of woods; general, but much less common than the last, which it closely resembles in most characters and from which it may not be distinct. Apr.–May. Eastern U. S.

6. **Antennaria plantaginifolia** (L.) Richards.

Stony slopes, in thin shade of pines or beeches, or sometimes on open grassy hillsides; abundant throughout. Apr.–May. Eastern U. S. (*A. decipiens* Greene.)

The staminate plants are abundant, in contrast to the last two species.

21. GNAPHALIUM L.

Leaves glabrous or nearly so on the upper surface, densely white-woolly beneath, usually acute or acuminate, broadest at or near the middle; heads short-stalked, in corymbs, the bracts white or brownish; pappus bristles distinct, falling separately; plants usually 60 cm. high or more.................... 1. **G. obtusifolium.**

Leaves copiously woolly on both surfaces, or sometimes glabrate on the upper surface in age; heads sessile, in spikes or dense clusters; plants mostly low, only rarely 60 cm. high and usually much lower.

- Stem leaves linear or nearly so, acute or acutish; heads clustered, whitish; pappus bristles distinct; stems much branched........................ 2. **G. uliginosum.**
- Stem leaves spatulate, obtuse; heads spicate, usually purplish; pappus bristles united at the base; stems mostly simple...................... 3. **G. purpureum.**

1. **Gnaphalium obtusifolium** L. EVERLASTING.

Dry open fields; common. July–Sept. Eastern N. Amer. (*G. polycephalum* Michx.)

2. **Gnaphalium uliginosum** L. LOW CUDWEED.

Wet meadows; near Le Droit Park and sources of Piney Branch (*Ward*); not collected since 1884. Widely distributed in N. Amer.

3. **Gnaphalium purpureum** L. PURPLISH CUDWEED.

Open fields or low ground; frequent. May–Sept. Eastern U. S. and in tropical Amer.

A single specimen of *G. spathulatum* Lam., native of the Gulf states, was collected in the Department of Agriculture Grounds, Oct., 1898 (*Steele*). This species resembles *G. purpureum*, but the stems are usually branched, the leaves thin, and the heads densely woolly.

Inula helenium L., elecampane, a native of Europe, was reported by Knowlton from Mount Vernon. It is a tall coarse perennial with large yellow heads. *Inula brittanica* L., also of Europe, was collected along the Pennsylvania Railroad, southeast of H Street Bridge, July and Aug., 1915 (*J. B. S. Norton*).

22. POLYMNIA L.

Rays 5, obovate or wedge-shaped, shorter than the bracts or but slightly exceeding them, yellowish white; lower leaves pinnately lobed; achenes 3-ribbed, not striate..**1. P. canadensis.**

Rays 10–15, narrowly oblong, much longer than the bracts, yellow; lower leaves palmately lobed; achenes conspicuously striate................**2. P. uvedalia.**

1. Polymnia canadensis L. SMALL-FLOWERED LEAFCUP.

Damp woods along the Potomac above Washington; common. July–Oct. Eastern U. S.

2. Polymnia uvedalia L. LARGE-FLOWERED LEAFCUP.

Damp woods along the Potomac; common. Aug.–Oct. Eastern U. S.

23. ACANTHOSPERMUM Schrank.

1. Acanthospermum australe (Loefl.) Kuntze. SPINY-BUR.

On the Virginia side of the Potomac half a mile beyond the railroad bridge, on the railroad embankment; plants forming a patch 4.5 by 6 meters which has persisted several years. Va. to La.; widely distributed in tropical regions.

24. SILPHIUM L.

Silphium laciniatum L., a native of the western and southern states, with pinnatifid leaves, was reported by Holm as having been found at Woodley Bridge; the plant has now disappeared.

1. Silphium trifoliatum L. ROSIN-WEED.

Woods or open fields; frequent. July–Aug. Eastern N. Amer.

A tall perennial with glabrous stems, finely toothed leaves, and large heads of yellow flowers. In general appearance it resembles some of our species of *Helianthus*, but it is easily distinguished by the broad bracts.

25. CHRYSOGONUM L.

1. Chrysogonum virginianum L. GOLDEN STAR.

Woods; common. Apr.–June; sometimes flowering in early or late autumn. Southern Pa. to Fla.

The variety *dentatum* described by Gray [1] scarcely deserves nomenclatorial recognition. It is supposed to have deltoid-ovate, acute, dentate-serrate, rather than ovate, obtuse, crenate leaves, but in these respects there is no constant difference. It was described from material collected on High Island.

26. PARTHENIUM L.

1. Parthenium integrifolium L.

Collected but once, on a dry hillside near the Hyattsville Swamp, in 1909 (*Standley*). Eastern U. S.

A coarse rough-hairy perennial with small heads of whitish flowers.

27. HELIOPSIS Pers.

1. Heliopsis helianthoides (L.) Sweet. OX-EYE.

Woods; chiefly along the Potomac. July–Sept. Eastern U. S. (*H. laevis* Pers.)

A coarse perennial with large heads of yellow flowers.

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[1] Bot. Gaz. 7: 31. 1882.

28. ECLIPTA L.

1. **Eclipta alba** (L.) Hassk.

Wet ground; common along the Potomac. July–Oct. Widely distributed in the U. S., doubtless naturalized northward; common in most tropical regions. (*Verbesina alba* L.; *E. procumbens* Michx.)

An inconspicuous annual with small heads of white flowers.

29. RUDBECKIA L.

Stems glabrous, or with a few minute appressed hairs just below the heads; rays drooping, bright yellow; receptacle elongate in fruit; disk flowers greenish yellow; lower leaves pinnately lobed............................1. **R. laciniata.**

Stems copiously hairy; rays spreading; receptacle not elongate in fruit; disk flowers deep purple; leaves 3-lobed or merely toothed.

Chaff of the disk long-acuminate, glabrous; lower leaves 3-lobed, sparsely hairy. Rays orange-yellow..2. **R. triloba.**

Chaff of the disk obtuse or acutish, pubescent; leaves merely toothed or entire.

Chaff of the disk densely and finely hairy; rays bright yellow; leaves densely hairy; pappus none.......................................3. **R. hirta.**

Chaff of the disk minutely hairy on the margin, otherwise glabrous; rays usually orange-yellow; leaves sparsely hairy; pappus a low crown......4. **R. fulgida.**

1. **Rudbeckia laciniata** L. TALL CONE-FLOWER.

Wet soil, often at the edge of water; common. Aug.–Oct. Widely distributed in N. Amer.

The golden glow, so common in cultivation, is a form of this species with "double" flowers, that is, the usually inconspicuous disk flowers have assumed the form of rays. Double-flowered plants are sometimes found wild.

2. **Rudbeckia triloba** L.

Woods along the Potomac above Washington. July–Oct. Eastern U. S.

3. **Rudbeckia hirta** L. BLACK-EYED SUSAN.

Woods and open fields; common. June–Sept. Nearly throughout the U. S. and southern Can.; adventive eastward.

4. **Rudbeckia fulgida** Ait. ORANGE CONE-FLOWER.

Dry woods; common. Aug.–Oct. Southern states, north to N. J.

The plants are somewhat variable, especially in leaf form, probably as a result of varying conditions as to moisture and light.

30. HELIANTHUS L. SUNFLOWER.

Leaves linear or nearly so, entire, sessile or subsessile. Stems hairy below and about the inflorescence; disk flowers purple; bracts linear-lanceolate, scabrous. 1. **H. angustifolius.**

Leaves lanceolate or broader, usually toothed.

Stem leaves sessile, opposite.

Stems glabrous except about the inflorescence; leaves spreading, lanceolate, sparsely hairy beneath, truncate at the base...............2. **H. divaricatus.**

Stems densely hairy; leaves ascending, ovate, densely soft-hairy beneath, cordate at the base..3. **H. mollis.**

Stem leaves petioled.

Plants annual; leaves alternate; disk of the head 2.5 cm. wide or often much broader. Stems hairy..4. **H. annuus.**

Plants perennial; leaves mostly opposite; disk 2 cm. wide or smaller.
  Leaves mostly crowded near the base of the stem, the upper ones distant and much reduced. Leaves ovate to lance-ovate, thick and firm, finely toothed, glabrous or nearly so; bracts shorter than the disk flowers, acute or acutish, finely hairy on the margin, usually glabrous on the outer face. 5. **H. dowellianus.**
  Leaves evenly distributed along the stems, the upper ones not much smaller than the lower.
    Stems glabrous except about the inflorescence.
      Leaves pale beneath, soft to the touch, finely hairy, lanceolate or oblong-lanceolate, obscurely and finely toothed or entire; bracts about as long as the disk flowers.................................6. **H. strumosus.**
      Leaves green on both sides, rough-hairy beneath, ovate or lance-ovate, conspicuously toothed; bracts much longer than the disk flowers. 7. **H. decapetalus.**
    Stems copiously hairy throughout.
      Leaves not 3-nerved, lanceolate, short-petioled, mostly alternate. 8. **H. giganteus.**
      Leaves 3-nerved, ovate, long-petioled, mostly opposite....9. **H. tuberosus.**

1. Helianthus angustifolius L. SWAMP SUNFLOWER.

Wet ground; northeast of Washington. Sept.–Oct. Eastern U. S.

2. Helianthus divaricatus L.

Woods and open fields; common. July–Sept. Eastern N. Amer.

3. Helianthus mollis Lam.

Open fields near Cabin John, Riverdale, and Hunting Creek; perhaps adventive. Aug.–Sept. Eastern U. S.

4. Helianthus annuus L. COMMON SUNFLOWER.

Waste ground about Washington; infrequent. Aug. Native of the western U. S.; frequently escaped from cultivation or adventive eastward.

5. Helianthus dowellianus M. A. Curtis.

Dry hillsides; Little Falls, High Island, and Rock Creek Park. Aug.–Sept. Md. to Ga. (*H. occidentalis dowellianus* Torr. & Gray; *H. occidentalis* of Ward's Flora.)

6. Helianthus strumosus L.

Woods; frequent. Sept. Eastern U. S.

Helianthus strumosus mollis Torr. & Gray is a form with the leaves more pubescent beneath.

7. Helianthus decapetalus L.

Damp woods; common. July–Oct. Eastern N. Amer.

8. Helianthus giganteus L.

Wet ground; frequent. Sept.–Oct. Eastern N. Amer., west to Colo.

9. Helianthus tuberosus L. JERUSALEM ARTICHOKE.

Low ground or marshes; frequent along the Potomac. Sept.–Oct. Eastern N. Amer. (*H. doronicoides* of Ward's Flora.)

The Jerusalem artichoke, the tubers of which are used for food, is derived from this plant.

31. **RIDAN** Adans.

1. Ridan alternifolius (L.) Britton. YELLOW IRON-WEED.

Damp or wet woods; frequent. Aug.–Oct. Eastern U. S. (*Verbesina alternifolia* Britton; *Actinomeris squarrosa* Nutt.; *A. alternifolia* DC.)

A tall coarse perennial with medium-sized heads of yellow flowers having 2 to 8 small unequal yellow rays.

32. VERBESINA L.

1. **Verbesina occidentalis** (L.) Walt. YELLOW CROWNBEARD.

Woods and fields, chiefly in alluvial soil; frequent. Aug.–Oct. Southeastern U. S. (*Phaethusa occidentalis* Britton; *V. siegesbeckia* Michx.)

A tall perennial with small heads of yellow flowers. In general appearance much like *Ridan alternifolius*, but readily distinguished by the wingless achenes.

33. COREOPSIS L.

Plants hairy; stem leaves mostly simple and entire, narrowly lanceolate or oblanceolate..1. **C. crassifolia.**
Plants glabrous; stem leaves all or nearly all compound.
  Leaves petioled, divided into 3 or 5 lanceolate to linear-lanceolate leaflets, or the uppermost simple; plants 1–2 meters high; pappus none......2. **C. tripteris.**
  Leaves sessile, parted into numerous linear-filiform segments; plants usually less than 60 cm. high; pappus of 2 short teeth..................3. **C. verticillata.**

Coreopsis tinctoria L. was reported by Ward as escaped in a few places but has not been collected recently. It is an annual plant, native of the western U. S., common in cultivation and frequently escaped.

1. **Coreopsis crassifolia** Ait.

Escaped in a few localities. Native of the southeastern states; often cultivated. (*C. lanceolata villosa* Michx.)

2. **Coreopsis tripteris** L. TALL TICKSEED.

Woods along the Potomac above Washington; frequent; also on Occoquan Creek and near Falls Church. July–Sept. Eastern U. S.

3. **Coreopsis verticillata** L. WHORLED TICKSEED.

Thin woods and open fields; common. June–Oct. Eastern U. S.

34. BIDENS L.

Leaves lanceolate, simple, toothed.
  Rays present; heads usually nodding in fruit.
    Rays much longer than the bracts; leaves finely and equally toothed, usually free at the base; achenes 6–9 mm. long..........................1. **B. laevis.**
    Rays mostly shorter than the bracts; leaves coarsely and unequally toothed, usually united at the base; achenes 5–6 mm. long...............2. **B. cernua.**
  Rays none; heads erect.
    Pappus awns upwardly barbed. Outer bracts 4 or 5, leaflike; leaves coarsely toothed; inner achenes less than 2 mm. broad............3. **B. bidentoides.**
    Pappus awns downwardly barbed.
      Outer involucre of 4 or 5 short entire bracts; achenes 4–6 mm. long, angled. 4. **B. connata.**
      Outer involucre of 6–8 toothed leaflike bracts; achenes about 1 cm. long, flat. 5. **B. comosa.**
Leaves pinnately parted or dissected, or the uppermost simple.
  Rays large and showy. Plants hairy; leaves with 5–7 linear-lanceolate, sharply toothed leaflets; achenes flat, more than 2 mm. broad..........6. **B. aristosa.**
  Rays none or inconspicuous.
    Leaves dissected into numerous small lobes; achenes linear, 4-angled. 7. **B. bipinnata.**
    Leaves composed of 3 or 5 large leaflets; achenes flat.
      Outer bracts 10–16; achenes brown, 3.3–4 mm. broad..........8. **B. vulgata.**
      Outer bracts 4–8; achenes black.
        Inner achenes less than 2 mm. broad; heads about 5 mm. high.9. **B. discoidea.**
        Inner achenes 2–3.3 mm. broad; heads 10–15 mm. long......10. **B. frondosa.**

1. **Bidens laevis** (L.) B. S. P. BUR MARIGOLD.
Wet ground; occasional. Sept. Eastern U. S. (*B. lugens* Greene; *B. chrysanthemoides* Michx.)

2. **Bidens cernua** L. BUR MARIGOLD.
Wet ground; common. Aug.–Oct. Nearly throughout the U. S. and southern Can.; also in Eur. and Asia.

3. **Bidens bidentoides** (Nutt.) Britton. SWAMP BEGGAR-TICKS.
Wet ground; near Cabin John. Aug.-Sept. N. J. to Md.

4. **Bidens connata** Muhl.
Swamp near Hyattsville. Sept. Eastern U. S.

5. **Bidens comosa** (A. Gray) Wiegand.
Swamps or wet ground; common. Aug.–Sept. Eastern U. S.

6. **Bidens aristosa** (Michx.) Britton.
Wet ground along the Potomac. and at Chesapeake Junction. Aug.–Sept. Eastern U. S.

7. **Bidens bipinnata** L. SPANISH NEEDLES.
Woods; common. Sept.–Oct. Eastern U. S., west to Ariz.

8. **Bidens vulgata** Greene.
Woods; frequent. Aug.–Oct. Widely distributed in N. Amer.

9. **Bidens discoidea** (Torr. & Gray) Britton.
Holmead Swamp and Bennings. Sept. Eastern U. S. (*Coreopsis discoidea* Torr. & Gray.)

10. **Bidens frondosa** L. BEGGAR-TICKS.
Damp woods or fields; common. Aug.–Oct. Nearly throughout the U. S. and southern Can.

35. GALINSOGA Ruiz & Pav.

Rays reddish; pappus of the disk flowers about half as long as the achenes. Pubescence copious, of loose spreading hairs............................**1. G. caracasana.**
Rays white; pappus of the disk flowers about as long as the achenes.
  Pappus scales of the disk flowers rather obtuse; pubescence of somewhat appressed hairs..**2. G. parviflora.**
  Pappus scales of the disk flowers very acute, bristle-tipped; pubescence of loose and spreading hairs..............................**2a. G. parviflora hispida.**

1. **Galinsoga caracasana** (DC.) Schultz Bip.
In a cornfield along the Potomac near Great Falls, August 7, 1910 (*F. W. Pennell*). Native of tropical Amer.; reported as adventive in Md. and N. J.

2. **Galinsoga parviflora** Cav.
Waste ground and cultivated fields; frequent. June–Oct. Native of tropical Amer.; adventive in many parts of the U. S.

2a. **Galinsoga parviflora hispida** DC.
Waste ground about Washington and in fields near Great Falls. Aug.–Oct. Native of tropical Amer.; adventive in the eastern U. S.

36. HELENIUM L.

Disk of the heads yellow; leaves elliptic-lanceolate to ovate-lanceolate, toothed. **1. H. autumnale.**
Disk purple; leaves lanceolate or linear-lanceolate, usually entire. **2. H. nudiflorum.**

1. Helenium autumnale L. SNEEZEWEED.

Wet meadows; common. Aug.–Oct. Nearly throughout the U. S. and southern Can.

2. Helenium nudiflorum Nutt. PURPLE SNEEZEWEED.

Collected above Plummers Island, east of Chevy Chase, and near Beltsville. July–Sept. N. C. to Tex., adventive northward.

37. ACHILLEA L.

1. Achillea millefolium L. YARROW.

Woods, open fields, and roadsides; abundant. June–Aug. Eastern N. Amer.; also in Eur. and Asia.

Characterized by the finely dissected, plumelike, strong-scented leaves. The rays are often tinged with pink.

38. ANTHEMIS L.

Plants ill-scented; leaves thrice pinnately lobed; receptacle without chaff near the margin; achenes roughened.......................................**1. A. cotula.**

Plants not ill-scented; leaves once or twice pinnately lobed; chaff subtending all the disk flowers; achenes smooth..............................**2. A. arvensis.**

1. Anthemis cotula L. MAYWEED. DOG FENNEL.

Waste ground; common. June–July. Native of Eur.; widely naturalized in N. Amer. (*Maruta cotula* DC.)

2. Anthemis arvensis L. CORN CAMOMILE.

Waste and cultivated ground; common. May–July. Native of Eur., widely naturalized in the U. S.

Anthemis tinctoria L., a European species with yellow rays, was collected at College Park in 1915 (*J. B. S. Norton*).

39. CHRYSANTHEMUM L.

The common cultivated chrysanthemums belong to this genus.

1. Chrysanthemum leucanthemum pinnatifidum Lecoq. & Lam. OX-EYE DAISY.

Fields; very abundant. May–Oct. Native of Eur. and Asia; widely naturalized in the U. S. (*Leucanthemum vulgare* of Ward's Flora.)

Chrysanthemum parthenium (L.) Bernh., feverfew, has been found a few times in waste ground about Washington. Native of Eur.; adventive or escaped from cultivation locally in the U. S. and southern Can.

Chrysanthemum balsamita L., costmary, was collected in waste ground at Fifteenth Street and Florida Avenue, September, 1899 (*Steele*). Native of the Old World; sparingly escaped from cultivation in the eastern U. S.

40. TANACETUM L.

1. Tanacetum vulgare L. TANSY.

Occasional on roadsides and in waste ground. July–Aug. Native of Eur.; often naturalized or escaped from cultivation in the U. S.

41. ARTEMISIA L.

1. Artemisia annua L. ANNUAL WORMWOOD.

Waste ground about Washington and Alexandria and at Glen Echo. Aug.-Sept Native of Asia; adventive or escaped from cultivation in many parts of the U. S.

An annual plant with sweet-scented foliage.

Artemisia caudata Michx. was reported from the vicinity of Alexandria, by Holm. No specimens have been seen by the writer. *Artemisia vulgaris* L. was collected along a roadside near Rosslyn, August, 1899 (*Steele*). Native of Eur. and Asia; adventive in the eastern U. S.

42. ARNICA L.

1. **Arnica acaulis** (Walt.) B. S. P. LEOPARD'S-BANE.

Sandy woods north and east of Washington and at Broadwater. May–Aug. Southeastern U. S. (*A. nudicaulis* Ell.)

A showy plant with large heads of yellow flowers and long yellow rays.

43. ERECHTITES Raf.

1. **Erechtites hieracifolia** (L.) Raf. FIREWEED.

Moist woods or fields. Aug.–Sept. Widely distributed in N. and S. Amer.

A coarse annual with narrow heads of whitish flowers. It is often found in burned-over areas, hence the common name.

44. MESADENIA Raf. INDIAN PLANTAIN.

Leaves glaucous beneath, the uppermost with a few large lobes..**1. M. atriplicifolia.**
Leaves green beneath, the uppermost with numerous teeth..........**2. M. reniformis.**

1. **Mesadenia atriplicifolia** (L.) Raf.

Woods; frequent. June–Sept. Eastern U. S. (*Cacalia atriplicifolia* L.)

2. **Mesadenia reniformis** (Muhl.) Raf.

High Island, June 6, 1880 (*Ward*); probably now extinct. Eastern U. S. (*Cacalia reniformis* Muhl.)

45. SYNOSMA Raf.

1. **Synosma suaveolens** (L.) Raf.

Low ground or damp woods along the Potomac; frequent. Aug.–Oct. Eastern U. S. (*Cacalia suaveolens* L.)

A tall glabrous perennial with triangular leaves and small heads of whitish flowers in corymbs.

46. SENECIO L.

A specimen of *Senecio vulgaris* L., an annual European species, was collected in the Department of Agriculture grounds in 1873 (*Vasey*).

Basal leaves cordate at the base, about as broad as long....................**1. S. aureus.**
Basal leaves not cordate at the base, rounded or tapering, often much longer than broad.
  Basal leaves broadly obovate....................................**2. S. obovatus.**
  Basal leaves not obovate, rounded or oblanceolate-oblong.
    Stem leaves lobed nearly or quite to the midrib; basal leaves oblanceolate-oblong; stem very woolly at the base.........................**3. S. smallii.**
    Stem leaves usually coarsely toothed, not lobed to the midrib; basal leaves rounded; stem nearly or quite glabrous at the base.......**4. S. crawfordii.**

1. **Senecio aureus** L. GOLDEN RAGWORT.

Damp woods and wet meadows; common. Apr.–May. Eastern N. Amer.

2. **Senecio obovatus** Muhl.

Reported from Great Falls by Greenman;[1] no specimens seen by the writer. Eastern U. S.

3. **Senecio smallii** Britton.

Thin woods and open fields; common. May–June. Pa. to Ala. (*S. aureus balsamitae* of Ward's Flora.)

Two of our specimens were determined as *S. pauperculus* Muhl. by Greenman, but they seem not to differ from others determined as *S. smallii*.

4. **Senecio crawfordii** Britton.

White gravel bog, southeast of Suitland. May. Pa., N. J., and Md.

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[1] Ann. Mo. Bot. Gard. 3: 111. 1916.

47. ARCTIUM L.

1. Arctium minus Schkuhr. BURDOCK.

Waste ground; common. May–July. Native of Eur.; widely naturalized in the U. S. (*Lappa officinalis* of Ward's Flora.)

Arctium tomentosum (Lam.) Schkuhr, with very woolly heads, was collected in waste ground about Washington, June, 1896 (*Steele*). Native of Eur.

48. CIRSIUM Mill. THISTLE.

- Leaves glabrous or nearly so, green.
  - Heads 2.5 cm. broad or smaller; perennial, with rootstocks; bracts with very short spiny tips..**1. C. arvense.**
  - Heads 5–7 cm. broad; biennial, without rootstocks; bracts with slender spiny tips. **2. C. odoratum.**
- Leaves densely white-woolly, at least beneath.
  - Bracts not ending in spines. Leaves pinnately lobed, white-woolly beneath when young, sometimes nearly glabrous in age; heads on naked stalks. **3. C. muticum.**
  - Bracts ending in spines.
    - Bracts all ending in spines. Leaves pinnately lobed, the lobes triangular, ending in sharp spines..................................**4. C. lanceolatum.**
    - Bracts only in part (the outer ones) ending in spines, the inner acuminate.
      - Peduncles naked or nearly so. Leaves deeply lobed.......**5. C. virginianum.**
      - Peduncles leafy, the heads subtended by leaves.
        - Leaves deeply lobed, the lobes lanceolate or linear..........**6. C. discolor.**
        - Leaves merely toothed, or the lowest sometimes shallowly lobed. **7. C. altissimum.**

1. Cirsium arvense (L.) Scop. CANADA THISTLE.

Waste ground; infrequent. June–Aug. Native of Eur.; widely naturalized in the U. S. and often a troublesome weed. (*Carduus arvensis* Robson; *Cnicus arvensis* Hoffm.)

2. Cirsium odoratum (Muhl.) Britton. PASTURE THISTLE.

In woods; Woodley. June. Me. to W. Va. (*Carduus odoratus* Porter.)

3. Cirsium muticum Michx. SWAMP THISTLE.

Above Cowdens, Sept., 1914 (*Steele*). Eastern N. Amer. (*Carduus muticus* Pers.)

4. Cirsium lanceolatum (L.) Hill. COMMON THISTLE.

Fields and pastures; infrequent. July–Oct. Native of Eur. and Asia; widely naturalized in the U. S. (*Carduus lanceolatus* L.; *Cnicus lanceolatus* Willd.)

5. Cirsium virginianum (L.) Michx. VIRGINIA THISTLE.

Wooded hillside along Difficult Run, June, 1915 (*Standley*). Southeastern U. S. (*Carduus virginianus* L.)

6. Cirsium discolor (Muhl.) Spreng. FIELD THISTLE.

Dry woods; frequent. Aug.–Sept. Eastern U. S.

7. Cirsium altissimum (L.) Spreng. TALL THISTLE.

Moist woods and copses; common. July–Oct. Eastern U. S.

Carduus nutans L., musk thistle, was collected in waste ground in southwest Washington in 1897. Native of Eur. and Asia; naturalized locally in the northeastern U. S.

49. ONOPORDON L.

1. Onopordon acanthium L. SCOTCH THISTLE.

Waste ground about Washington and Alexandria, frequent about the latter place and well established. Native of Eur. and Asia; adventive in the northeastern U. S.

50. CENTAUREA L.

Besides the species entered below, each of the following, all natives of Europe, has been collected once in our region: *Centaurea solstitialis* L., Vienna, July, 1909 (*C. L. Shear*); *C. vochinensis* Bernh., along the Pennsylvania Railroad, southeast of the H Street Bridge, 1915 (*J. B. S. Norton*); *C. nigra* L., Daniels Road, July, 1914 (*Steele*); *C. jacea* L., Franklin Park and Pinehurst. None of them, probably, is established.

Bracts ending in long stout spines; heads sessile; leaves with spiny lobes and teeth.
1. C. calcitrapa.
Bracts not spiny; heads stalked; leaves not spiny.
  Stem leaves all divided into linear lobes.........................**2. C. maculosa.**
  Stem leaves all or mostly entire.................................**3. C. cyanus.**

1. Centaurea calcitrapa L. STAR THISTLE.

Abundant in waste ground at Alexandria; occasional about Washington. May-Sept. Native of Eur.; adventive in the eastern U. S.

2. Centaurea maculosa Lam.

Collected near Mullikin and at Franklin Park; perhaps not established. July-Aug. Native of Eur.; occasionally adventive in the eastern U.S.

3. Centaurea cyanus L. CORN-FLOWER.

Occasional in waste ground and grain fields. Native of Eur.; often cultivated for its showy blue, pink, or white flowers.

Known also as bluebottle and bachelor's-button.

SUMMARY OF THE LARGER GROUPS, WITH NUMBERS OF GENERA AND SPECIES.

	Genera.	Species.		Genera.	Species.
PTERIDOPHYTA.			MONOCOTYLEDONEAE—con.		
Ophioglossaceae	2	4	Melanthiaceae	7	9
Osmundaceae	1	3	Liliaceae	7	15
Schizaeaceae	1	1	Convallariaceae	6	8
Polypodiaceae	17	35	Smilacaceae	1	6
Equisetaceae	1	2	Amaryllidaceae	1	1
Lycopodiaceae	1	7	Dioscoreaceae	1	2
Selaginellaceae	1	2	Iridaceae	3	9
Isoetaceae	1	2	Orchidaceae	16	31
GYMNOSPERMAE.			DICOTYLEDONEAE.		
Pinaceae	4	9	Saururaceae	1	1
			Salicaceae	2	15
MONOCOTYLEDONEAE.			Myricaceae	2	2
			Juglandaceae	2	7
Typhaceae	1	2	Betulaceae	5	6
Sparganiaceae	1	3	Fagaceae	3	23
Potamogetonaceae	2	13	Ulmaceae	2	5
Naiadaceae	1	2	Moraceae	3	4
Alismaceae	3	9	Urticaceae	7	8
Vallisneriaceae	2	2	Loranthaceae	1	1
Poaceae	57	186	Santalaceae	1	1
Cyperaceae	13	155	Aristolochiaceae	2	2
Araceae	5	6	Polygonaceae	8	28
Lemnaceae	3	3	Chenopodiaceae	3	7
Xyridaceae	1	2	Amaranthaceae	3	8
Eriocaulaceae	1	2	Allioniaceae	1	1
Commelinaceae	2	4	Phytolaccaceae	1	1
Pontederiaceae	2	3	Aizoaceae	1	1
Juncaceae	2	16	Portulacaceae	3	3

SUMMARY OF THE LARGER GROUPS, WITH NUMBERS OF GENERA AND SPECIES.—Continued.

	Genera.	Species.		Genera.	Species.
DICOTYLEDONEAE—contd.			DICOTYLEDONEAE—contd.		
Corrigiolaceae	3	4	Daphnaceae	1	1
Alsinaceae	6	13	Lythraceae	4	5
Silenaceae	6	11	Melastomataceae	1	2
Nymphaeaceae	2	2	Onagraceae	10	16
Cabombaceae	2	2	Haloragidaceae	2	2
Ceratophyllaceae	1	1	Araliaceae	2	5
Ranunculaceae	13	31	Apiaceae	20	28
Berberidaceae	3	3	Cornaceae	2	7
Menispermaceae	1	1	Clethraceae	1	1
Magnoliaceae	2	2	Pyrolaceae	2	6
Annonaceae	1	1	Monotropaceae	3	3
Lauraceae	2	2	Ericaceae	8	10
Papaveraceae	3	3	Vacciniaceae	3	7
Fumariaceae	3	4	Primulaceae	6	11
Brassicaceae	23	43	Diospyraceae	1	1
Capparidaceae	1	1	Oleaceae	3	6
Sarraceniaceae	1	1	Loganiaceae	2	2
Droseraceae	1	2	Gentianaceae	4	9
Podostemaceae	1	1	Apocynaceae	2	6
Crassulaceae	1	3	Asclepiadaceae	4	16
Penthoraceae	1	1	Convolvulaceae	2	8
Saxifragaceae	5	5	Cuscutaceae	1	5
Hydrangeaceae	1	1	Polemoniaceae	2	6
Escalloniaceae	1	1	Hydrophyllaceae	3	6
Grossulariaceae	2	2	Boraginaceae	9	13
Hamamelidaceae	2	2	Verbenaceae	2	5
Platanaceae	1	1	Menthaceae	26	51
Rosaceae	14	38	Solanaceae	5	10
Malaceae	5	16	Scrophulariaceae	21	45
Amygdalaceae	2	9	Bignoniaceae	1	1
Caesalpiniaceae	4	6	Orobanchaceae	4	4
Fabaceae	24	66	Pinguiculaceae	3	4
Geraniaceae	2	7	Acanthaceae	2	3
Oxalidaceae	2	6	Phrymaceae	1	1
Linaceae	1	4	Plantaginaceae	1	7
Rutaceae	1	1	Rubiaceae	6	15
Simaroubaceae	1	1	Caprifoliaceae	5	16
Polygalaceae	1	11	Valerianaceae	2	5
Euphorbiaceae	7	16	Dipsacaceae	1	1
Callitrichaceae	1	4	Cucurbitaceae	2	2
Limnanthaceae	1	1	Campanulaceae	2	4
Anacardiaceae	3	6	Lobeliaceae	1	5
Aquifoliaceae	1	4	Cichoriaceae	9	23
Celastraceae	2	3	Ambrosiaceae	2	5
Staphyleaceae	1	1	Asteraceae	50	153
Aceraceae	2	4			
Impatientaceae	1	2	SUMMARY.		
Rhamnaceae	1	2			
Vitaceae	3	8	Pteridophyta	25	56
Tiliaceae	1	1	Spermatophyta:		
Malvaceae	4	8	Gymnospermae	4	9
Hypericaceae	4	10	Angiospermae—		
Elatinaceae	1	1	Monocotyledoneae	138	489
Cistaceae	2	5	Dicotyledoneae	479	1,076
Violaceae	2	21			
Passifloraceae	1	1	Total	646	1,630
Cactaceae	1	1			

Of the species formally listed 287 have been introduced from other regions, chiefly from Europe. In addition, there are mentioned incidentally 108 species which have been found only as waifs.

GLOSSARY.

Abortive. Imperfectly developed; defective.

Acaulescent. Stemless, or with the stem subterranean.

Achene. A small dry one-seeded one-celled indehiscent fruit.

Acuminate. Tapering at the end; long-acute.

Acute. Terminating sharply in an angle of less than 90 degrees.

Adherent. Joined to some other organ but structurally distinct from it.

Adnate. Attached by one side or by its surface to a different organ or part.

Adventive. Imperfectly naturalized.

Aerial. Referring to above-ground organs or parts, as contrasted with those below ground.

Aggregate. Said of "polymorphous" species or groups of individuals not well understood and suspected of including several distinct species or subspecies.

Alternate. Not opposite; arising singly at different heights.

Ament. A catkin or spike with flexible axis, usually scaly.

Anastomosing. Connecting by branches or cross veins, forming a network.

Annual. Maturing from seed germinated within the year; of one year's duration only.

Anther. The pollen-bearing part of the stamen.

Anthesis. The time of opening of a flower.

Antrorse. Directed upward.

Apetalous. Lacking petals.

Appressed. Lying closely against another organ or part.

Approximate. Situated close together, but not united.

Arcuate. Bowlike; lightly curved.

Aristate. Awned or bristle-tipped.

Articulate. Jointed.

Ascending. Directed obliquely upward, or curving upward.

Attenuate. Long-tapering, becoming slender or very narrow.

Auricled. Having earlike appendages or basal lobes.

Awl-shaped. Attenuate from the base to a slender or rigid point; subulate.

Awn. A bristle-like organ or appendage; in grasses, the continuation of the nerves of the bracts of the spikelet, sometimes stout and variously twisted, rarely trifid.

Axil. The angle formed between the axis and any leaf, branch, or organ arising from it.

Axillary. Arising from an axil; borne at an axil.

Beaked. Ending in an elongate, comparatively stout tip.

Bearded. Bearing long hairs in tufts or over small areas; barbate.

Berry. A fruit with fleshy pericarp.

Bidentate. Having two teeth; or, as to margins, doubly toothed.

Biennial. Maturing during the second year from seed.

Bifid. Cleft into two parts.

Bilabiate. Two-lipped.

Bilobate. Two-lobed.

Bipinnate. Twice pinnate, that is, the primary divisions of a pinnate organ again pinnate.

Bipinnatifid. Twice pinnatifid, that is, the primary divisions of a pinnatifid organ again pinnatifid.

Blade. The expanded part of a leaf, sepal, or petal.

Bract. A more or less modified leaf subtending a flower, flower cluster, or sporangium.

Bracteate. Having bracts.

Bracteolate. Having bractlets.

Bracteole. Bractlet.

Bractlet. A secondary bract, borne on the pedicel of a flower.

Bristle. A long stiff hair or hairlike organ.

Bulb. A leaf bud (usually subterranean), with fleshy scales or coats.

Bulblet. A small bulb, particularly one borne upon the stem.

Bullate. Appearing as if blistered.

Caducous. Falling off very soon after development.

Callus. A hard or indurate projection; in grasses, the base of the mature floret, the callus being sharp and pilose in such genera as *Stipa* and *Aristida*.

Calyx. The outer series of perianth parts.

Campanulate. Bell-shaped.

Canescent. Hoary, with fine gray pubescence.

Capillary. Hairlike.

Capitate. Borne in a head or dense cluster.

Capsule. A dry dehiscent fruit formed of two or more carpels.

Carinate. Keeled; with a more or less sharp longitudinal ridge.

Carpel. The modified leaf forming a simple ovary, or one member of a compound ovary.

Cartilaginous. Firm and tough; cartilage-like.

Caruncle. A wartlike appendage to a seed at or near the hilum.

Caryopsis. The dry indehiscent one-seeded fruit of grasses, in which the pericarp is adherent to the seed, as the grain of wheat or corn.

Catkin. See ament.

Caudate. Having a slender taillike tip or terminal appendage.

Caulescent. Producing a stem above ground.

Cauline. Pertaining to the stem.

Cell. The cavity of an anther or ovary.

Cespitose. Growing in tufts; tufted.

Chaff. Dry bracts.

Chartaceous. Of papery texture.

Chlorophyll. The green coloring matter of plants.

Ciliate. Fringed with hairs on the edge.

Circumscissile. Dehiscing transversely, the top separating like a lid.

Claw. The greatly narrowed base of some petals.

Cleft. Cut about half way to the midvein or base.

Cleistogamous. Producing seed from flowers which are self-fertilized in the bud, the floral envelope not opening.

Cochleate. Spiral, like a snail shell.

Compound. Composed of two or more like parts joined together. Compound leaf, one divided into separate leaflets. Compound ovary, one composed of two or more carpels.

Conduplicate. Folded lengthwise.

Cone. A compact series of overlapping scalelike carpels, arranged about a common axis.

Confluent. Running together; blended in one.

Coniferous. Cone-bearing.

Connate. Said of similar organs more or less completely joined to each other.

Coralloid. Resembling coral.

Cordate. Heart-shaped; with two rounded lobes at base.

Coriaceous. Of leathery texture.

Corm. An enlarged solid fleshy base of a stem.

Corolla. The inner series of perianth parts.

Corymb. A flat-topped or convex open flower cluster, with the pedicels arising from different points on the stem, the outer flowers blooming earliest.

Corymbose. Borne in a corymb; corymb-like.

Cotyledon. A rudimentary leaf of the embryo within the seed.

Creeping. Extending along or just below the surface of the ground and rooting.

Crenate. Scalloped; with rounded teeth.

Crenulate. Minutely crenate.

Crested. Provided with a raised crestlike appendage.

Crisped. Ruffled, as if having an excess of leaf tissue.

Crown. An inner appendage to a petal or to the throat of a corolla; the perennial portion of a herbaceous plant above the root; a low cuplike border terminating an achene or other organ.

Cucullate. Hoodlike, or provided with a hood.

Culm. The flowering stem of sedges and grasses.

Cuneate. Wedge-shaped.

Cuspidate. Tipped with a cusp or sharp stiff point.

Cyme. A flat-topped or convex flower cluster, the central flowers blooming earliest.

Cymose. Arranged in cymes; cymelike.

Deciduous. Falling away; not evergreen.

Decompound. More than once compound.

Decumbent. Reclining, but with the end ascending (applied to stems and branches).

Decurrent. Extending down upon another part and adhering to it below the point of attachment.

Definite. Of a constant number.

Deflexed. Bent or directed abruptly downward.

Dehiscent. Opening by valves, slits, etc., to discharge the contents.

Deltoid. Broadly triangular, like the Greek letter Δ.

Dentate. Toothed, the teeth commonly acutish, nearly equal-sided, and projecting at a right angle.

Denticulate. Minutely dentate.

Depressed. Flattened from above.

Diadelphous. The stamens combined in two sets.

Dichotomous. Forked regularly into two nearly equal branches.

Dicotyledonous. Having two cotyledons.

Diffuse. Loosely spreading, the branches usually numerous.

Digitate. Compound, the similar parts radiating from a common point; also said of the spikes or spikelike racemes of grasses when approximate by the shortening of the rachis at the summit of the culm.

Dimorphous. Occurring in two forms.

Dioecious. Unisexual, the staminate and the pistillate flowers borne on different individuals.

Discoid. Disklike, or lacking ray flowers.

Disk. An enlargement of the receptacle of a flower around the base of the pistil; also, the head of tubular flowers in Asteraceae, etc.

Dissected. Cut or finely divided into numerous lobes or segments.

Distichous. Arranged in two rows, more especially when this arrangement is conspicuous.

Distinct. Separate from each other; evident.

Divaricate. Diverging at a wide angle.

Divided. Lobed to the base or midvein.

Dorsal. Borne upon or relating to the back or outer surface of an organ.

Drupe. A fleshy or pulpy fruit, the inner portion of the pericarp hard and stony.

Echinate. Beset with prickles.

Ellipsoid. A solid body, elliptic in lengthwise section.

Elliptic. With the outline of an ellipse; narrowly oval.

Emarginate. Shallowly notched at the end.

Embryo. The rudimentary plant within the seed.

Emergence. An outgrowth involving subepidermal tissue.

Endocarp. The inner layer of the pericarp.

Endosperm. The nutritive substance surrounding the embryo of a seed.

Entire. Without divisions, lobes, or any marginal cutting.

Epicarp. The outer layer of the pericarp or matured ovary.

Epiphyte. A plant growing upon another plant, but not organically connected with it.

Equitant. Astride; referring to conduplicate leaves which enfold each other in two ranks.

Erose. Unevenly toothed, as if gnawed.

Estipulate. Lacking stipules.

Evergreen. Bearing green leaves at all seasons of the year.

Excurrent. Projecting beyond the main part of the organ.

Exfoliating. Peeling off naturally in thin layers.

Exocarp. The outer layer of the pericarp.

Exserted. Projecting beyond the surrounding organs, especially stamens from a corolla.

Extrorse. Facing or directed outward, as the openings of an anther.

Falcate. Shaped somewhat like the blade of a scythe; curved and flat, usually tapering toward the tip.

Fascicle. A close bundle or cluster of like organs having a common source.

Fastigiate. Referring to stems or branches which are erect and close together.

Fertile. Bearing organs or elements essential to reproduction.

Fertilization. The complete fusion of a male and a female reproductive cell.

Fibrous. Fiber-like or composed of fibers.

Fibro-vascular. Composed of woody fibers and ducts.

Filament. The part of a stamen which bears the anther.

Filamentous. Composed of threadlike structures.

Filiform. Threadlike; long, slender, and terete.

Fimbriate. Fringed.

Flabellate. Fan-shaped, either in outline or in venation.

Flagellate. With the apex slenderly prolonged into a whiplike tail.

Flexuous. Zigzag; bent or curved alternately in two directions.

Floccose. With loose tufts of woollike hairs.

Floret. A small flower, usually one of a head or dense cluster; in grasses, the flower with its inclosing lemma and palea.

Foliaceous. Leaflike in texture, appearance, or function.

Foliolate. Consisting of separate leaflets.

Foliose. Leafy; leaflike.

Follicle. A simple fruit composed of one carpel, dehiscing along one suture.

Free. Entirely separate from other organs; (in venation) not at all joined.

Frond. The leaf of ferns and some other cryptogams or, loosely, of palms or fern-like plants; also, in Lemnaceae, the expanded leaflike stem.

Fruit. The seed-bearing product of a plant, of whatever form.

Fugacious. Of temporary duration; falling or fading soon after development.

Furcate. Simply forked; once forked.

Fuscous. Dusky brown.

Fusiform. Spindle-shaped; tapering from the middle toward each end.

Gamopetalous. Having the petals more or less united.

Geniculate. Abruptly bent like a knee.

Gibbous. Humped or swollen on one side.

Glabrate. Nearly glabrous, or becoming so.

Glabrous. Devoid of hairs.

Gland. A secreting cell or cellular structure.

Glandular. Glandlike, or bearing glands.

Glaucous. Covered with white or bluish bloom.

Globose. Spheric or essentially so.

Glomerate. Compactly clustered.

Glomerule. A small dense cyme.

Glume. One of the lowest pair of bracts in the spikelet of grasses.

Gregarious. Growing in groups of several to many individuals.

Habit. The general appearance of a plant.

Habitat. The characteristic environment of a species.

Halberd-shaped. Same as hastate.

Hastate. Shaped like an arrowhead, but with the basal lobes pointing outward.

Head. A dense cluster of sessile or nearly sessile flowers.

Herb. A plant with no persistent woody stem above ground.

Herbaceous. (1) Having the characters of an herb, as opposed to a woody or partly woody plant; (2) leaflike in texture and color; (3) of a firm, rather brittle consistency, breaking readily.

Hilum. The scar or small area of attachment of a seed.

Hirsute. With rather coarse or stiff straight hairs.

Hirtellous. Minutely hirsute.

Hispid. With stiff or bristle-like hairs.

Hispidulous. Minutely hispid.

Hood. A concave form of petal or sepal resembling a monk's hood.

Hyaline. Translucent.

Hybrid. The offspring from crossing two species.

Imbricate. Partially overlapping or, in a flower bud, at least one segment wholly external and one internal.

Imperfect. Pertaining to flowers which lack either stamens or pistils; unisexual.

Incised. Cut sharply and rather deeply, often irregularly.

Included. Not protruding from the surrounding organs.

Indefinite. Of uncertain number or very numerous.

Indehiscent. Not opening spontaneously.

Indigenous. Native to the region.

Indurate. Hardened.

Indusium. The small, often membranous, special structure covering the sorus in ferns.

Inequilateral. Unequal-sided.

Inferior. Situated below another organ; more particularly referring to an ovary adherent to the calyx.

Inflated. Bladder-like.

Inflorescence. The flowering portion of a plant; the mode of arrangement of the flowers.

Infra-. A latin prefix signifying below; as infra-stipular, below the stipules.

Insertion. The mode of attachment of one organ to another; the position of an organ relative to another.

Internode. The portion of a stem or branch between two nodes.

Involucel. A secondary involucre, as in the Apiaceae .

Involucrate. Having an involucre.

Involucre. A whorl of distinct or united bracts or leaves subtending a flower or flower cluster.

Involute. Rolled inward from the margins upon the upper surface.

Irregular. Referring to flowers whose corresponding parts are unequal in size, form, or structure.

Keel. The two lower united petals of a papilionaceous flower; the midnerve of a compressed floral bract in grasses and sedges.

Keeled. Provided with a more or less sharp longitudinal ridge, like the keel of a boat

Lacerate. Irregularly cleft, as if torn.

Laciniate. "Slashed"; cut into slender pointed segments.

Lanceolate. Lance-shaped; 3 or 4 times as long as broad and tapering from the basal third to a narrow apex.

Leaflet. A single division of a compound leaf.

Legume. The fruit of Caesalpiniaceae and Fabaceae, one-carpeled, usually dry, two-valved, and dehiscing along the back.

Leguminous. Pertaining to a legume, or to the families Fabaceae and Caesalpiniaceae.

Lemma. The outer bract of the floret of grasses, called also the flowering glume.

Lenticular. Having the shape of a double-convex lens.

Ligule. A strap-shaped corolla, as in the ray flowers of Asteraceae; also, in grasses and a few other families, an appendage, usually membranaceous, on the inner side of the junction of the sheath and blade.

Limb. The expanded portion of a gamopetalous corolla or calyx above the throat.

Linear. Many times longer than broad, and with the sides parallel or nearly so.

Lip. The upper or the lower division of a bilabiate corolla or calyx; the peculiar upper (apparently lower) petal in Orchidaceae.

Lobed. Divided to about the middle, or bearing lobes.

Lunate. Crescent-shaped.

Lyrate. Pinnatifid and having the terminal lobe rounded and much larger than the others.

Megasporangium. The receptacle in which megaspores develop.

Megaspore. The larger of two kinds of spores borne by a plant, particularly in certain families of Pteridophyta, giving rise to the female prothallium.

Membranaceous. Thin, membrane-like, and somewhat translucent.

Micropyle. Orifice of the ovule, and the corresponding point on the seed.

Microsporangium. The receptacle in which microspores develop.

Microspore. The smaller of the two kinds of spores borne by a plant, especially in the Pteridophyta, giving rise to the male prothallium.

Midrib. The principal, usually middle, rib of a leaf.

Midvein. The middle vein of a leaf or other leaflike organ.

Monadelphous. Referring to stamens united by their filaments into a tube or column.

Monocotyledonous. Having a single cotyledon.

Monoecious. Having stamens and pistils in separate flowers on the same plant.

Mucro. A short straight abrupt tip.

Mucronate. Ending in a short straight abrupt tip.

Multifid. Very freely and deeply cut into narrow segments or lobes.

Muricate. Rough with short hard prominences.

Naked. Lacking organs or protective parts normally present in related species or genera.

Naturalized. Not native, but having become thoroughly established as a part of the flora of a region.

Node. The point upon a stem at which a leaf or whorl of leaves is borne, frequently hard and thickened.

Nodose. Marked by numerous or conspicuous nodes; knobby or knotty.

Nodulose. Marked by small knotlike or knoblike nodes or by partitions.

Nut. An indehiscent one-celled one-seeded fruit with a hard or bony pericarp.

Nutlet. A diminutive nut; one of the achene-like parts of the fruit of Boraginaceae, Verbenaceae, Menthaceae, etc.

Ob-. A Latin prefix, usually signifying inversion.

Obconic. Inversely conic, being attached at the slender end.

Oblanceolate. Inversely lanceolate, the broadest part being above the middle.

Oblique. Slanting; making an acute angle with the axis.

Oblong. Longer than broad, with the sides nearly parallel.

Obovate. Inverted-ovate.

Obovoid. Inverted-ovoid.

Obsolete. Not evident; in a rudimentary or vestigial state.

Obtuse. Not sharply pointed; blunt or rounded at the end.

Ocreæ. The membranous, sheathing, united stipules of Polygonaceae.

Opaque. Dull; not shining or translucent.

Opposite. Referring to leaves or similar organs which arise on the stem in twos, one on each side of the node; also, one part above or before another, as a stamen in front of a petal.

Orbicular. Essentially circular.

Ovary. The ovule-bearing part of the pistil.

Ovate. Having the outline of a hen's egg in longitudinal section, with the broad end downward.

Ovoid. Shaped like a hen's egg.

Ovule. The body which after fertilization develops into the seed.

Palea. The bract of a floret of grasses standing between the flower and the rachilla or axis of the spikelet.

Palet. See palea.

Palmate. Referring to organs which are radiately lobed or divided, suggesting the outspread fingers of the hand.

Panduriform. Fiddle-shaped.

Panicle. A compound inflorescence with pedicellate flowers; the compound fertile parts of certain dimorphous ferns and fern allies.

Paniculate. Borne in a panicle; resembling a panicle.

Papilionaceous. Referring to the peculiar irregular corolla of the Fabaceae, consisting of standard, wings, and keel.

Papillose. Bearing minute blunt protuberances.

Pappus. The peculiar calyx limb of Asteraceae, etc., surmounting the achene and commonly bristle-like, awnlike, or feathery.

Parasitic. Growing on other organisms and deriving nourishment from them.

Parietal. Borne on the wall of a capsule, or pertaining to it.

Parted. Cleft nearly to the base.

Parthenogenetic. Developing without the agency of fertilization.

Pectinate. Regularly pinnatifid into numerous narrow, closely set segments; having organs or members arranged in a pectinate or comblike manner.

Pedate. Palmately divided or parted, but having the lateral segments two-cleft.

Pedicel. The support of a single flower of a flower cluster; in grasses, the support of a single spikelet.

Pedicellate. Borne on a pedicel.

Peduncle. A main flower stalk supporting a flower cluster or a solitary flower.

Pedunculate. Borne upon a peduncle.

Pellucid. Transparent or somewhat so.

Peltate. Attached to its stalk at some point of the lower surface, instead of at the margin.

Pendulous. More or less hanging.

Percurrent. Extending throughout the entire length of the organ.

Perennial. Living year after year.

Perfect. Referring to flowers which have both pistil and stamens.

Perfoliate. Referring to leaves whose clasping bases are united, as if pierced by the stem.

Perianth. The floral envelope, consisting of the calyx and corolla, however incomplete or modified.

Pericarp. The walls of the fruit; the matured ovary wall.

Perigynium. The membranous, often inflated sac inclosing the ovary or achene in the genus *Carex.*

Persistent. Referring to organs which after the growing period remain attached to the parts bearing them.

Petal. A division of the corolla.

Petaliferous. Bearing petals.

Petiolate. Furnished with a petiole.

Petiole. The stalk by which the blade of a leaf is attached to the stem.

Pilose. Provided with soft hairs.

Pinna. A primary division of a pinnately compound frond or leaf; leaflet.

Pinnate. Referring to compound leaves, with the segments or leaflets arranged on each side of a common axis.

Pinnatifid. Pinnately lobed or cleft to the middle or beyond.

Pinnule. A division of a pinna; a secondary pinna.

Pistil. The seed-producing organ of a flower, consisting of ovary, style, and stigma (or the style wanting).

Pistillate. Referring to flowers which are provided with pistils but not with stamens, and to individual inflorescences and plants having only pistillate flowers.

Pitted. Having numerous small depressions.

Placenta. Any ovule-bearing part of the ovary.

Plaited. Same as plicate.

Plano-convex. Flat on one side and convex on the other.

Plicate. Folded into regular elongate plaits, like a fan.

Plumose. Feather-like, with fine hairs on each side.

Plumule. The bud of the embryo.

Pod. The popular name for a dry dehiscent fruit, especially a legume.

Pollen. The fecundating granules developed within the anther.

Polygamous. Bearing both perfect and imperfect flowers.

Polypetalous. Having the petals distinct from each other.

Pome. The fleshy fruit of the apple family.

Prickle. A stiff sharp-pointed emergence.

Procumbent. Trailing or lying on the ground, but without rooting at the nodes.

Proliferous. Reproducing vegetatively by buds, bulblets, or offshoots.

Prostrate. Lying flat upon the ground.

Prothallium. The inconspicuous sexual stage of the Pteridophyta, giving rise to the spore-bearing plant known as a fern or fern ally.

Puberulent. Very finely pubescent.

Pubescent. Covered with short hairs.

Punctate. Dotted with small depressions or translucent glands.

Pungent. Ending in a sharp stiff point.

Quadrate. Nearly square in form.

Raceme. A form of inflorescence in which the pediceled flowers are borne upon an elongate axis.

Racemose. In racemes, or resembling a raceme.

Rachilla. A little rachis or axis, applied especially to the axis of the spikelet of grasses.

Rachis. The axis of a compound leaf or of an inflorescence.

Radiate. Spreading from a common center; bearing ray flowers.

Radical. Arising from the root or the base of the stem.

Radicle. The rudimentary stem of the embryo below the cotyledons; called also hypocotyl or caulicle.

Ray. The branch of an umbel; the marginal flowers of an inflorescence in composites when different from those of the disk.

Receptacle. The somewhat enlarged end of the flower stalk upon which numerous flowers or the organs of a flower are borne.

Recurved. Curved downward or backward.

Reflexed. Bent back or down abruptly.

Regular. Having members of the same kind alike in shape, size, or structure.

Reniform. Kidney-shaped.

Repand. Referring to an uneven, somewhat sinuate margin, or to leaf blades that are wavy or "fluted" toward the margin.

Reticulate. Net-veined; like a network.

Retrorse. Directed back or downward.

Retuse. With a shallow notch at the end.

Revolute. Rolled backward from the margin or apex upon the lower surface.

Rhachilla. See rachilla.

Rhizome. Same as rootstock.

Rib. A main or prominent leaf vein; a raised line or ridge on fruit or other organs.

Root. The underground part of the plant which supports it and provides it with nourishment from the soil.

Rootstock. A prostrate or subterranean stem, usually emitting roots at the nodes.

Rostrate. Having a stiff beaklike tip.

Rotate. Wheel-shaped, referring to a corolla or calyx which has the spreading limb flattish and circular in outline.

Rotund. Roundish; nearly orbicular.

Rugose. With wrinkled surface.

Runner. A slender stolon.

Sac. A pouch, especially the cavity of an anther.

Saccate. Pouchlike; provided with a pouch or sac.

Sagittate. Shaped like an arrowhead, with the acutish basal lobes directed downward.

Salient. Directed outward (referring to marginal teeth).

Salverform. Salver-shaped, referring to corollas having the slender tube very abruptly expanded into a flat limb.

Samara. An indehiscent winged fruit.

Saprophyte. A plant which grows on dead organic matter.

Scabrous. Rough to the touch.

Scale. A reduced leaf at the base or beginning of a shoot; in sedges, the bract subtending the flower; in Asteraceae, etc., the bracts on the receptacle at the side of (below) each flower.

Scape. A leafless or nearly leafless peduncle arising from the underground parts of a plant.

Scapose. Bearing a scape, or resembling one.

Scarious. Thin, dry, and membranaceous, and not green.

Secund. Apparently borne along one side of an axis (usually referring to flowers).

Seed. The ripened ovule, consisting of the embryo and its coverings.

Segment. A natural division of an organ or structure, as of a separating fruit.

Sepal. A division of the calyx.

Septate. Provided with partitions.

Sericeous. Very closely covered with fine appressed soft straight hairs of silky appearance.

Serrate. Having sharp teeth directed forward.

Serrulate. Finely serrate.

Sessile. Attached directly, without a stalk of any kind.

Setaceous. Bristle-like.

Setose. Beset with bristles.

Sheath. The lower tubular part of a leaf inclosing the stem, especially in grasses and sedges.

Shoot. A stem with its leaves and other appendages.

Silique. The peculiar long two-valved capsule of the Brassicaceae.

Silky. See sericeous.

Simple. Undivided; not compound.

Sinuate. With the outline of the margin strongly wavy.

Sinus. The angle between two lobes.

Smooth. Unarmed; without roughness due to spines, tubercles, or coarse outgrowths

Sorus. A group or cluster of sporangia, as in the ferns.

Spadix. A spike with a fleshy axis.

Spathe. One or more large bracts subtending or inclosing an inflorescence, especially a spadix.

Spatulate. Gradually narrowed downward from a rounded apex.

Spicate. Spikelike or arranged in a spike.

Spike. An elongate inflorescence or branch of an inflorescence with the flowers sessile or nearly so.

Spikelet. A small or a secondary spike, particularly as applied to the flower clusters of grasses and sedges.

Spine. A rigid sharp-pointed outgrowth of a plant, being a modified stem or leaf.

Spinulose. Minutely spiny; applied loosely also to margins with variously awned teeth.

Sporangium. A spore case.

Sporophyll. The leaf subtending the sporangium in certain of the fern allies, or the specialized spore-bearing leaf parts as a whole.

Spreading. Diverging nearly at right angles.

Spur. A hollow, saclike or tubular extension of a floral organ.

Squarrose. Having the parts or appendages wide-spreading.

Stamen. The organ of a flower which bears the pollen grains.

Staminate. Stamen-bearing.

Staminodium. A sterile stamen, or any similar sterile structure corresponding to it.

Standard. The broad upper petal of a papilionaceous corolla, as, for example, in a pea blossom.

Stellate. Star-shaped, the slender segments or divisions radiating from a common center.

Stem. The main leafy axis of a plant.

Sterile. Without functioning reproductive organs; in the ferns, without sporangia.

Stigma. The tip or other part of a pistil through which fertilization by the pollen grains is accomplished.

Stipe. The stalklike support of an organ or part; more especially, the leaf stalk of a fern.

Stipitate. Distinctly stalked; provided with a stipe.

Stipulate. Having stipules.

Stipule. One of a pair of appendages borne at the base of certain petioles, or these sometimes united.

Stolon. A trailing basal branch rooting at the nodes.

Stoloniferous. Producing stolons.

Stramineous. Straw-colored.

Striate. Minutely grooved or furrowed.

Strict. Perfectly straight and upright.

Strigose. Beset with appressed straight stiff hairs.

Style. The usually slender portion of the pistil connecting the stigma with the ovary.

Sub-. A Latin prefix, usually signifying somewhat, slightly, or nearly.

Subacute. Acutish; somewhat acute.

Subcordate. Shallowly two-lobed, referring to the base.

Subcoriaceous. Somewhat leathery in texture.

Subulate. Awl-shaped.

Succulent. Juicy, fleshy.

Suffrutescent. Slightly shrubby.

Sulcate. Grooved or furrowed lengthwise.

Superior. Situated above another organ; more particularly referring to an ovary which is free from the calyx.

Suture. A line of splitting or dehiscence.

Symmetrical. Referring to flowers which have the same number of members in each whorl.

Tendril. A slender, leafless, spirally coiled organ of attachment developing from modified stems or leaves.

Terete. Circular in cross section; cylindric or nearly so.

Ternate. Arranged in threes.

Thorn. A stout spine.

Throat. The orifice of a gamopetalous corolla or calyx; the orifice of any tubular organ, as of a sheath in grasses.

Thyrse. A contracted, cylindrical or ovoid and usually compact panicle.

Thyrsoid. Resembling a thyrse.

Tomentose. With a dense woollike covering of closely entangled, matted hairs.

Tomentulose. Sparingly or minutely tomentose.

Tomentum. A close matted covering of entangled woollike hairs.

Toothed. Furnished with marginal teeth of various form; more exactly, dentate.

Trifoliolate. Having three leaflets.

Triquetrous. Sharply three-angled, the sides concave or channeled.

Truncate. Terminating abruptly, as if cut off crosswise.

Tuber. A short thickened underground branch having numerous buds.

Tubercle. A small tuber or tuber-like body; a small wartlike excrescence; the persistent base of the style in certain Cyperaceae.

Tuberculate. With small wart-like projections.

Tuberous. Tuber-like in appearance; having the characteristics of a tuber.

Turbinate. Inversely conical; top-shaped.

Turgid. Thick, as if swollen by sap.

Umbel. An indeterminate inflorescence in which the peduncles or the pedicels of a cluster arise from a common point, the outer flowers blooming earliest.

Umbellate. Borne in umbels; umbel-like.

Uncinate. Hooked; resembling a hook.

Undulate. With wavy surfaces, especially toward the margins; repand.

Unguiculate. Having a contracted clawlike base.

Unisexual. Referring to flowers wholly of one sex, either staminate or pistillate.

Urceolate. Hollow and urn-shaped, constricted near the mouth.

Utricle. A small bladdery one-seeded fruit; any small inflated body.

Valvate. Meeting by the margins in the bud, without overlapping; opening by valves, as a capsule.

Valve. One of the segments into which a capsule splits.

Vascular. Provided with vessels or conducting tissue.

Veinlet. A branch of a vein.

Veins. The smaller branches of vascular tissue forming the framework of the leaf.

Venation. The arrangement of the veins.

Ventricose. Swelling unequally; inflated on one side.

Vernation. The arrangement of leaves or leaf parts in the bud.

Verrucose. Covered with wartlike prominences.

Versatile. Fixed at a point near the middle and thus swinging freely (referring to an anther).

Verticillate. Arranged in a whorl.

Vesicle. A small bladder-like air cavity.

Vestigial. Referring to structures or organs which function incompletely if at all, being in the nature of vestiges or remnants of their former condition.

Villous. Beset with long soft weak hairs.

Virgate. Wandlike; slender, straight, and erect.

Viscid. Sticky to the touch; glutinous.

Whorl. An arrangement of three or more leaves or other organs in a circle about a common axis.

Whorled. See verticillate.

Wing. Each of the two lateral petals of a papilionaceous corolla; any thin expansion bordering an organ or part.

Winged. Provided with a thin expanded border.

Woolly. Clothed with long, tortuous or branched, usually entangled hairs.

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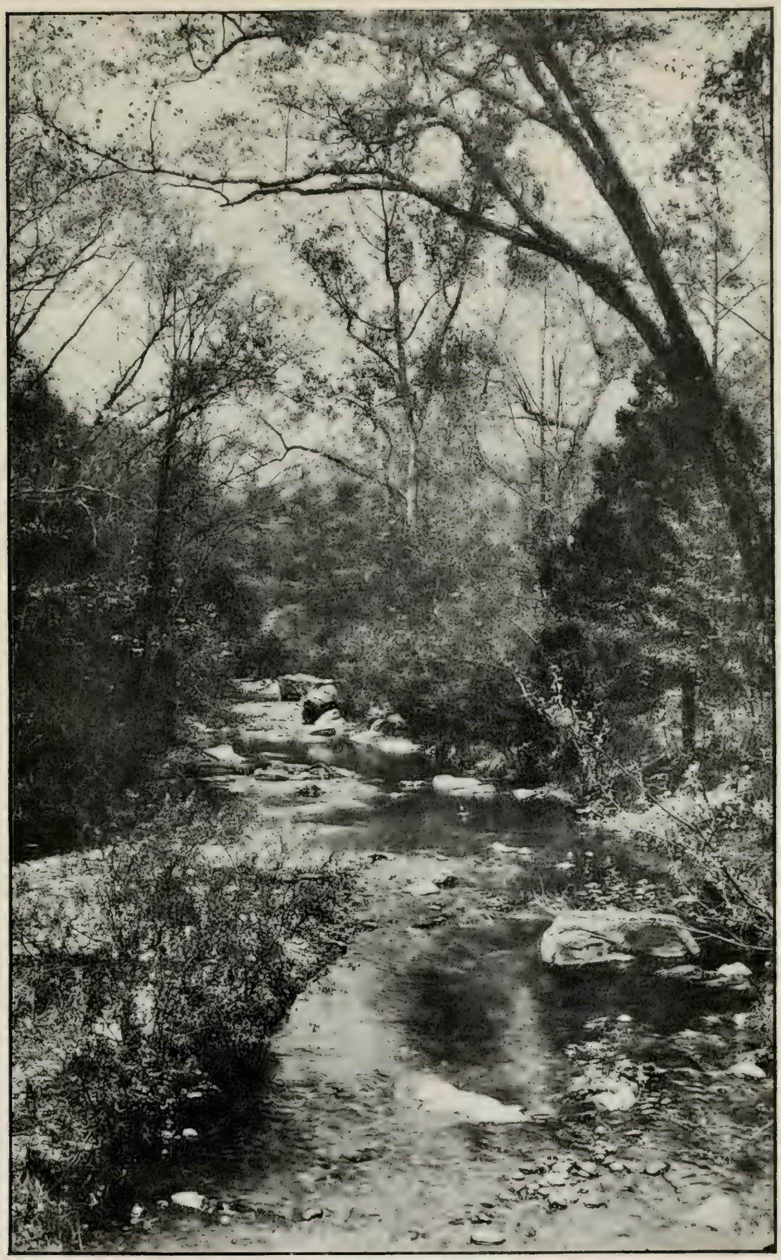
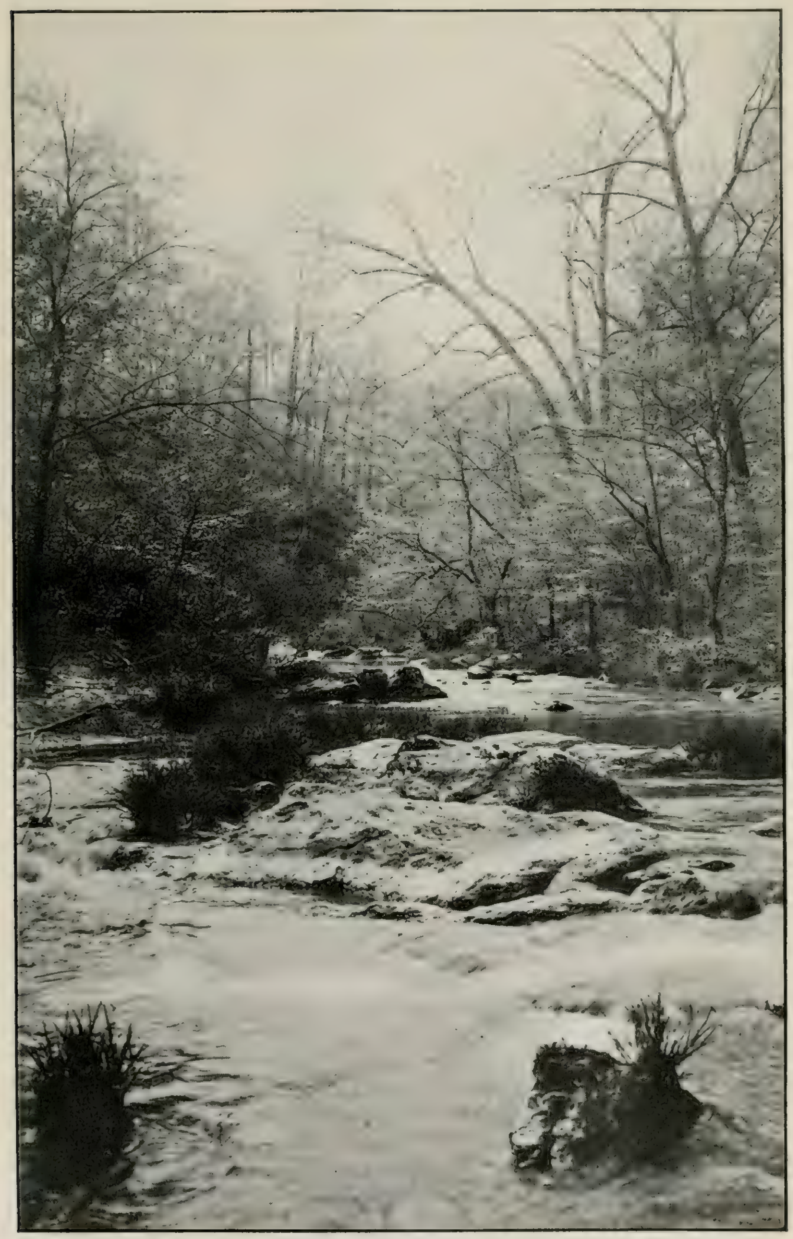
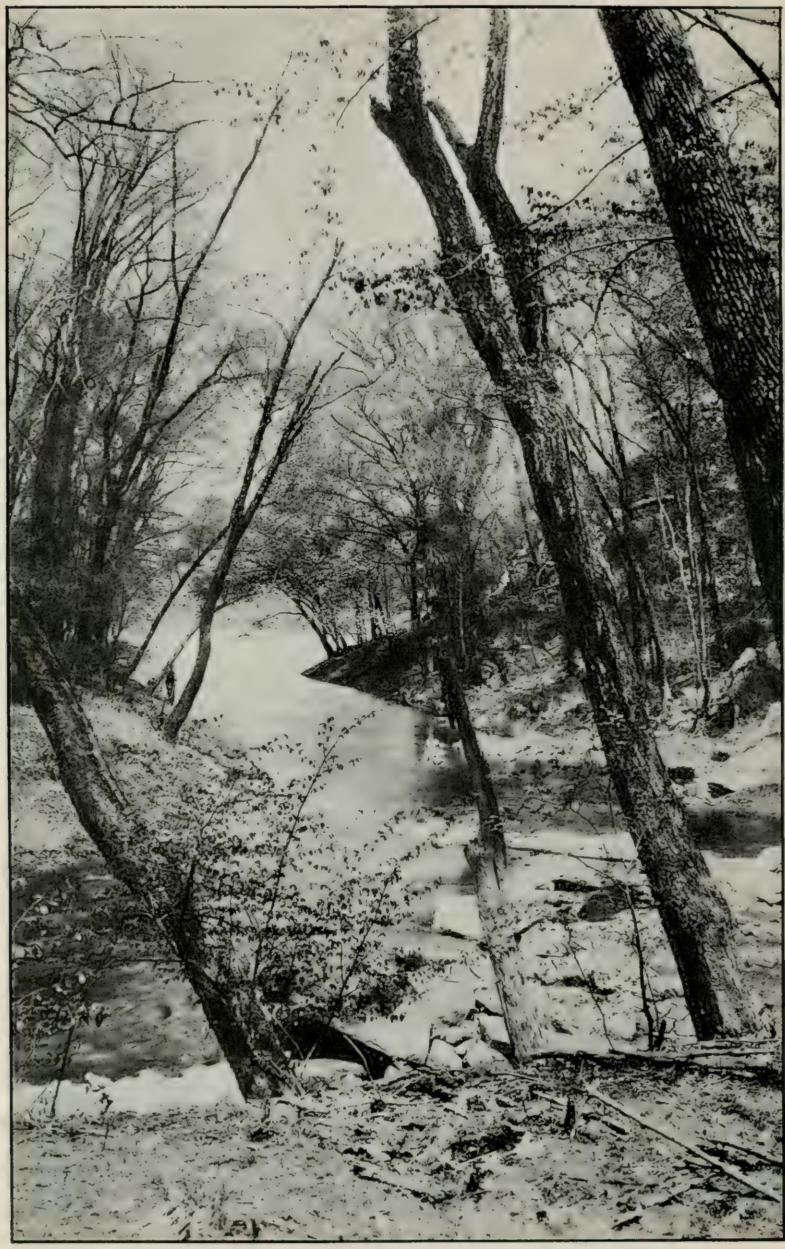


PAINT BRANCH.

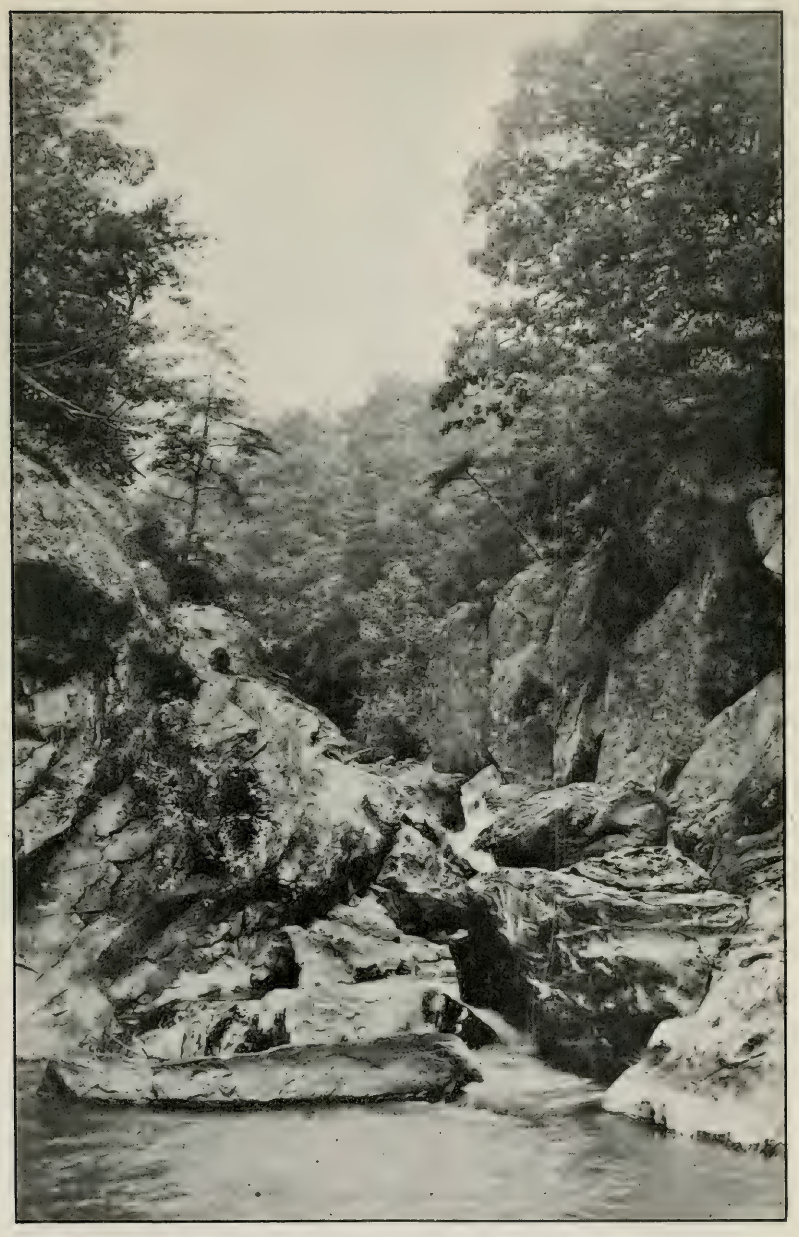
DRIVE NEAR PINEY BRANCH, ROCK CREEK PARK.



NORTHWEST BRANCH.



DIFFICULT RUN, LOOKING OUT UPON THE POTOMAC.



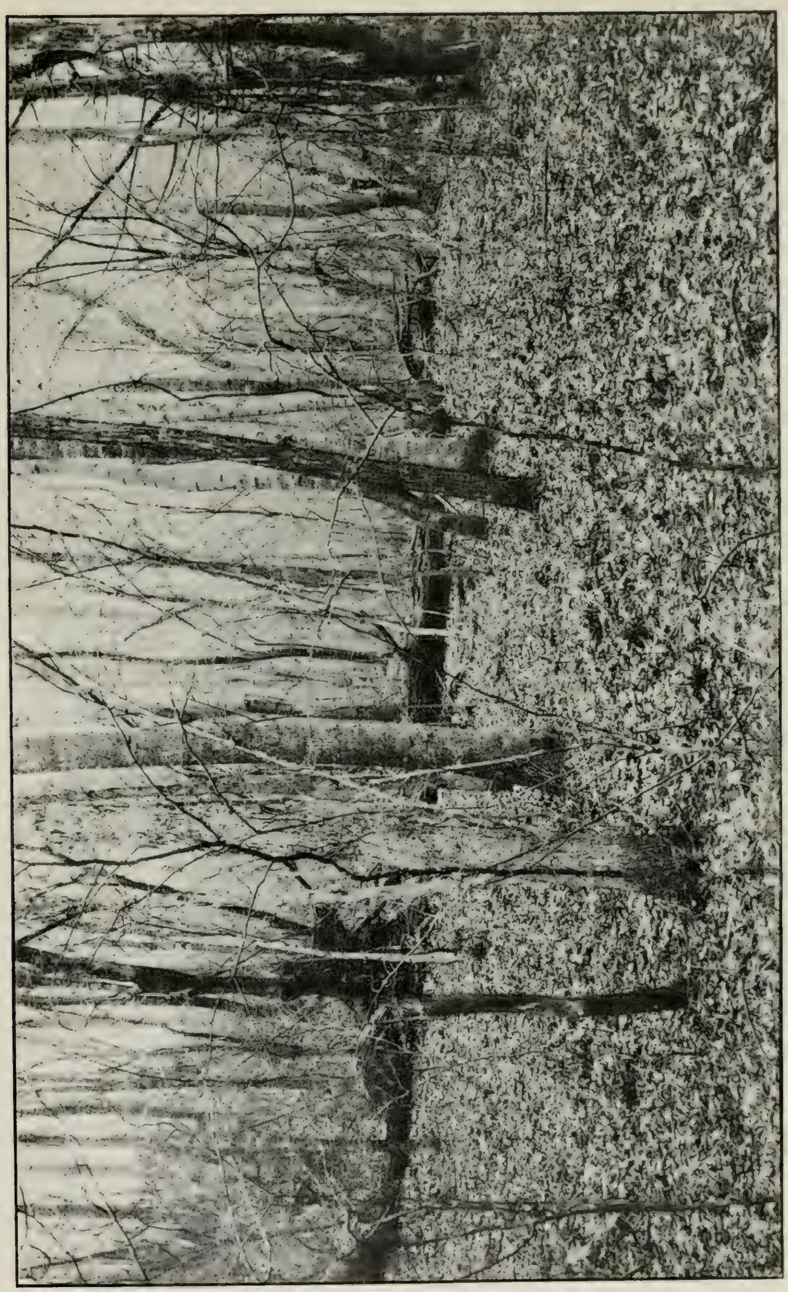
A ROCKY GORGE IN DIFFICULT RUN.

THE POTOMAC BELOW GREAT FALLS.

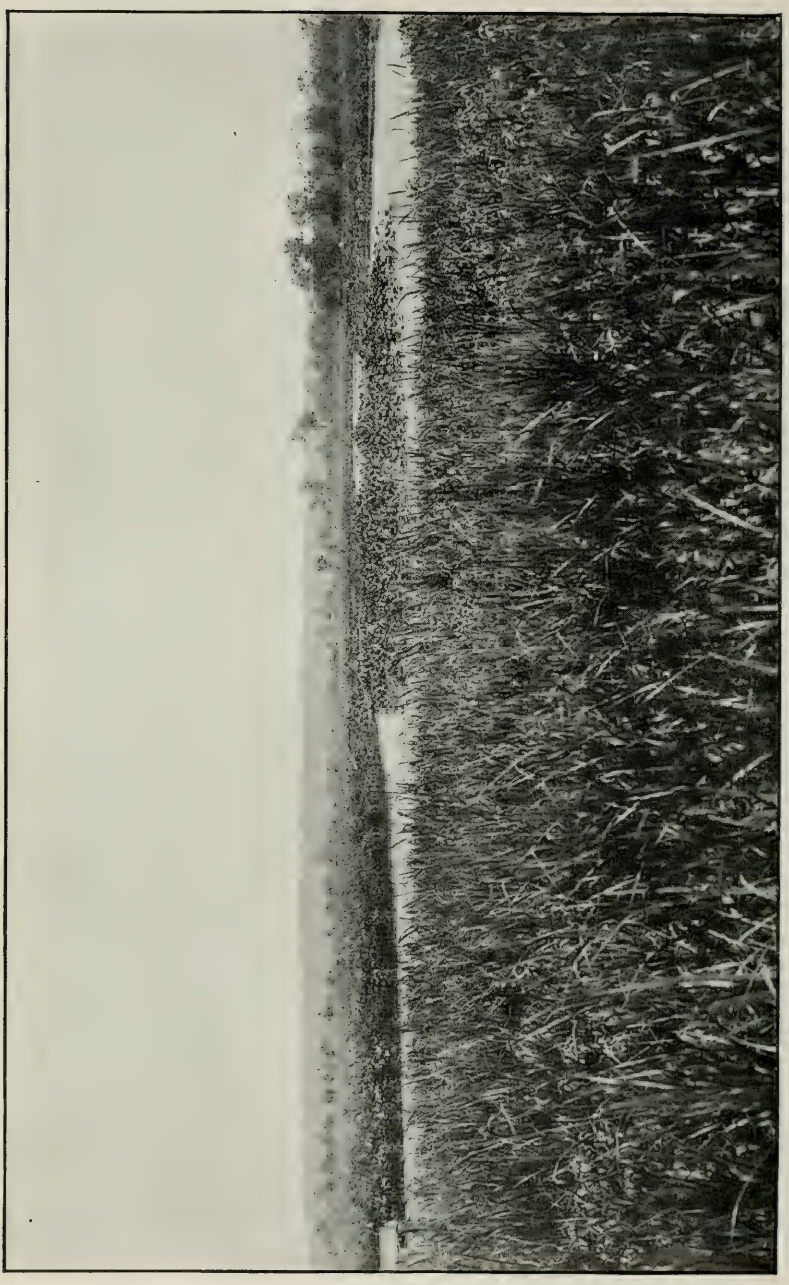
AN OLD CHANNEL OF THE POTOMAC BELOW GREAT FALLS.

A. THE CHESAPEAKE AND OHIO CANAL BELOW BROADWATER.

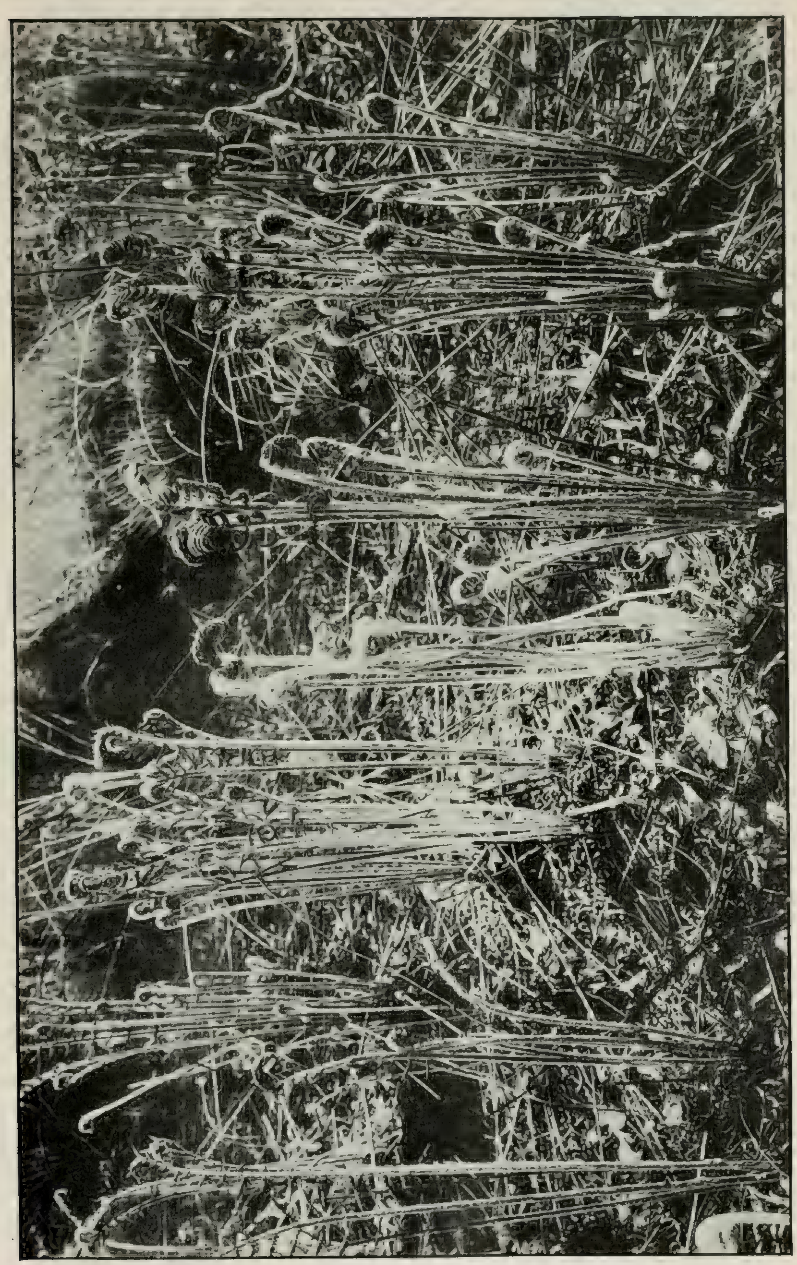
B. GREAT FALLS FROM THE VIRGINIA SIDE.



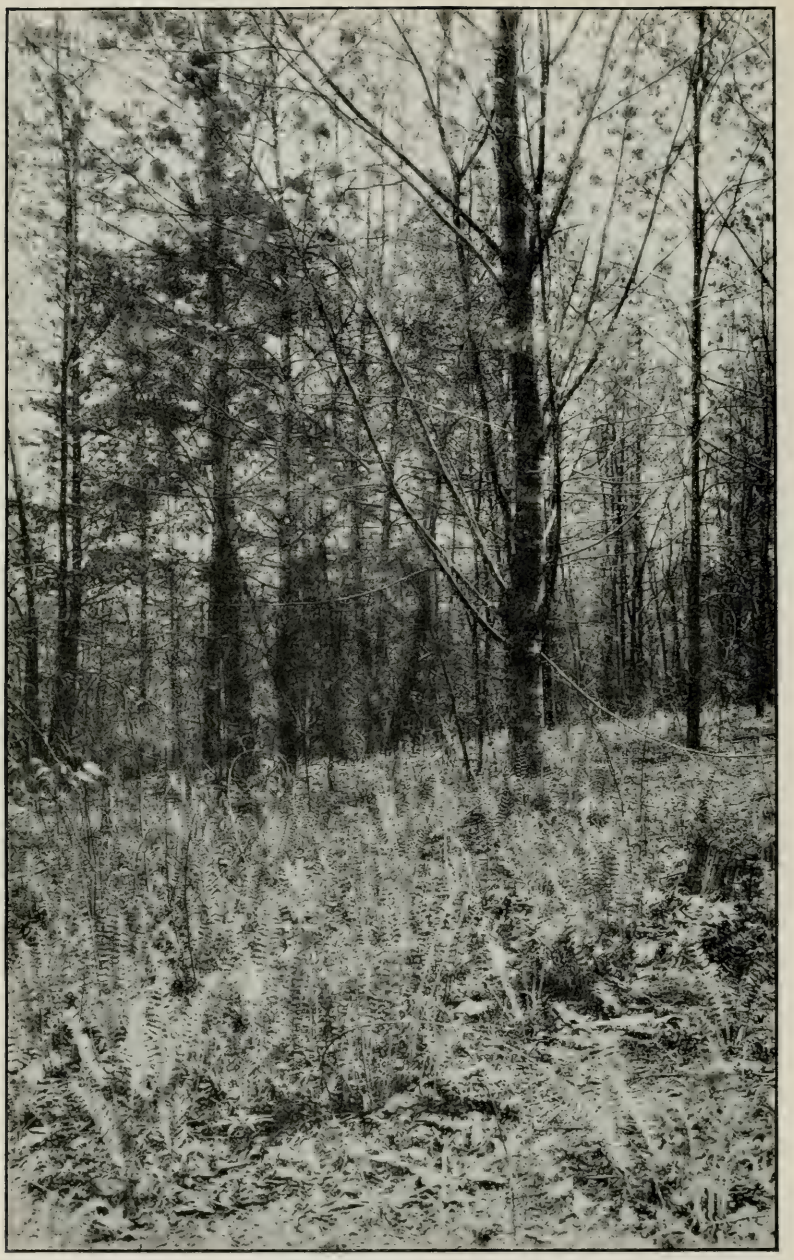
WOODS ALONG THE FLOOD PLAIN OF CABIN JOHN RUN IN APRIL. THE HOME OF SUCH SPRING FLOWERS AS SPRING BEAUTY, TROUT LILY, AND PEPPER-ROOT.



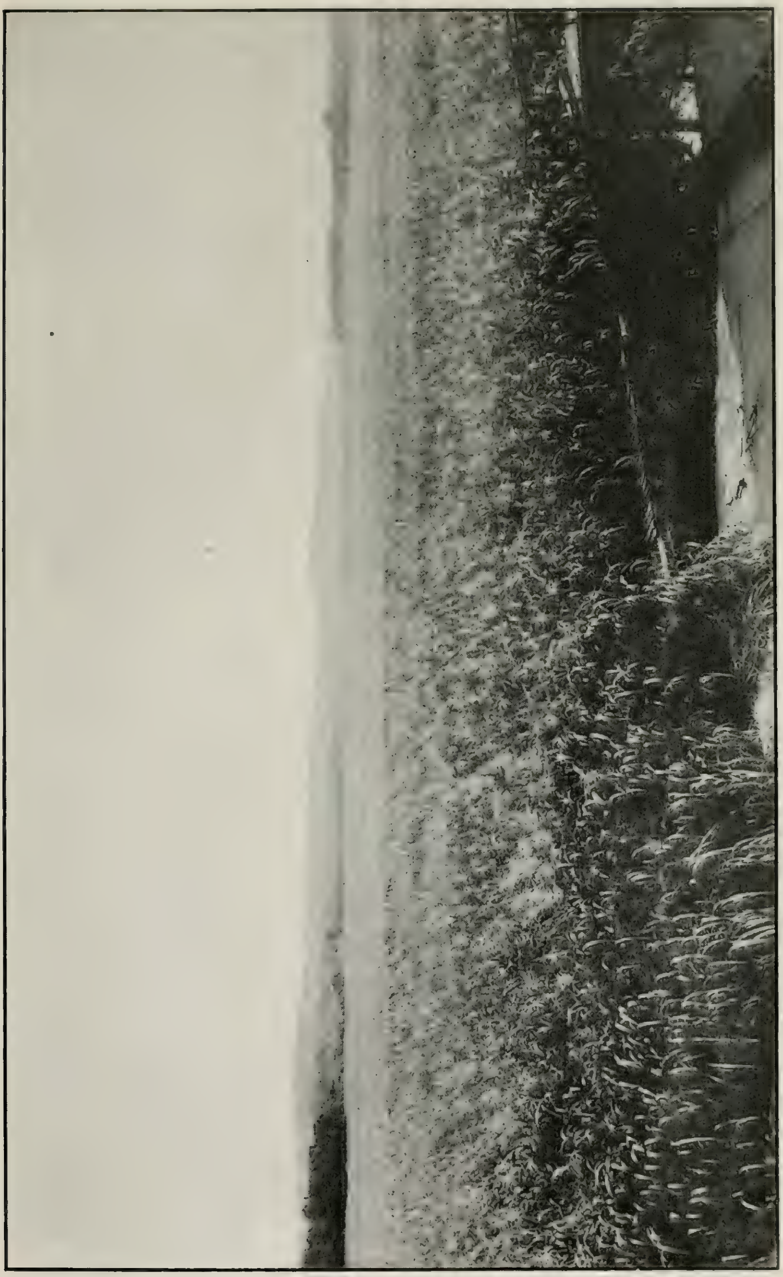
MARSH NEAR DYKE, WITH SCIRPUS AND OTHER SEDGES IN THE FOREGROUND.



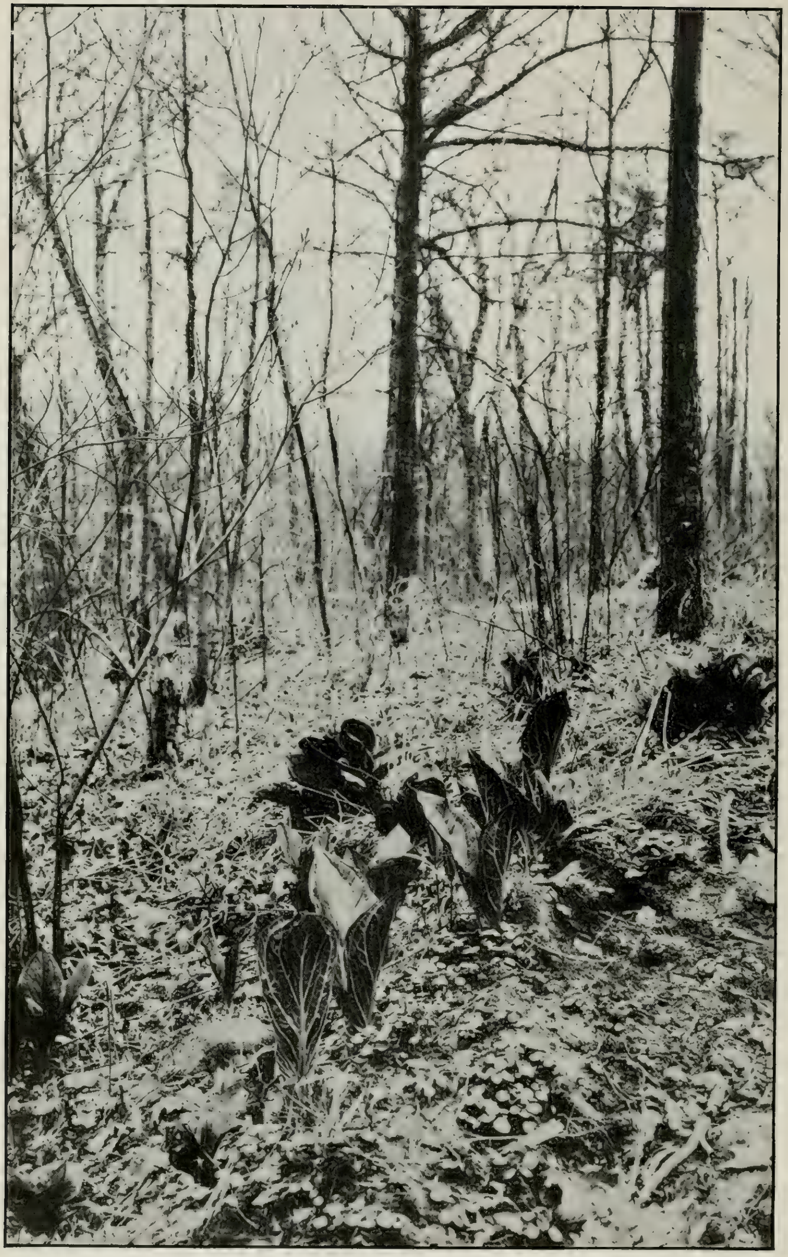
CINNAMON FERN (OSMUNDA CINNAMOMEA), COMMON IN MARSHES. SPRING STAGE, AS THE FRONDS ARE UNROLLING.



CHRISTMAS FERN (POLYSTICHUM ACROSTICHOIDES) ON WOODED HILLTOP NEAR DIFFICULT RUN.



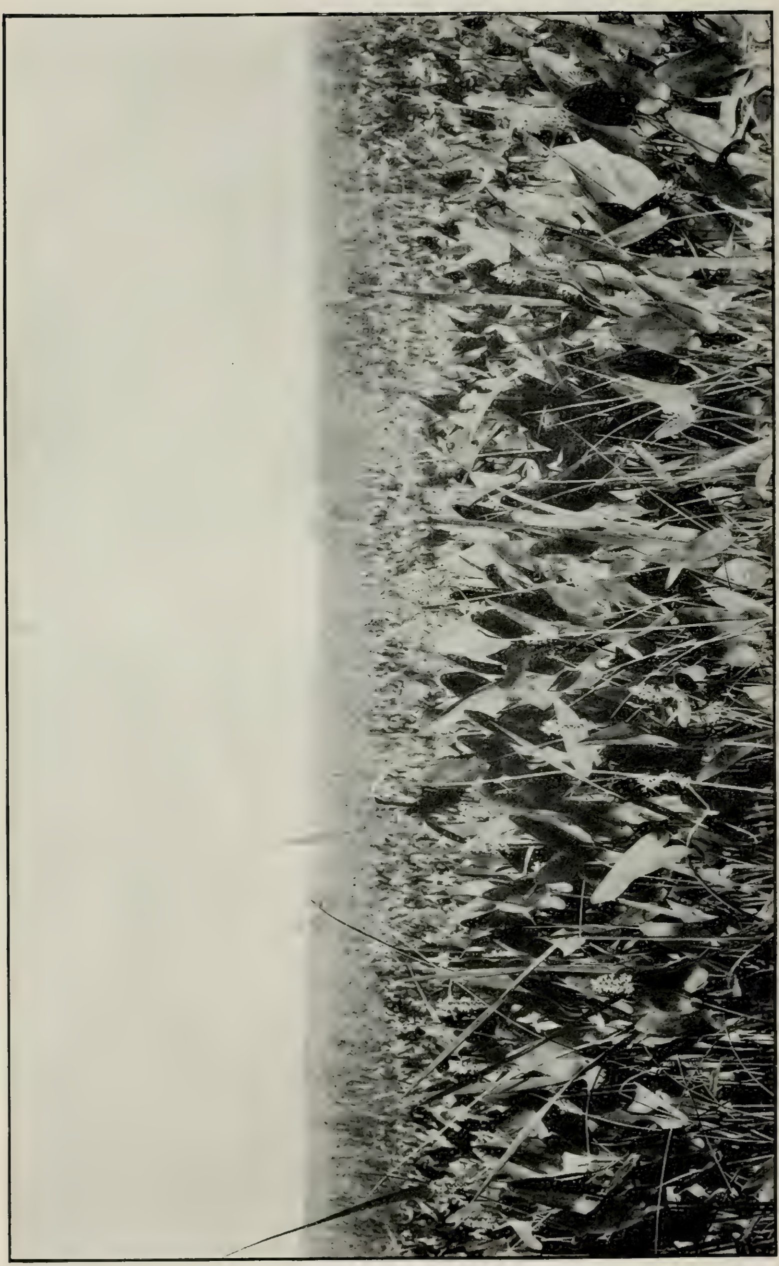
WILD RICE (ZIZANIA PALUSTRIS). AN EXTENSIVE MARSH IN THE UPPER PART OF THE LOWER EASTERN BRANCH.



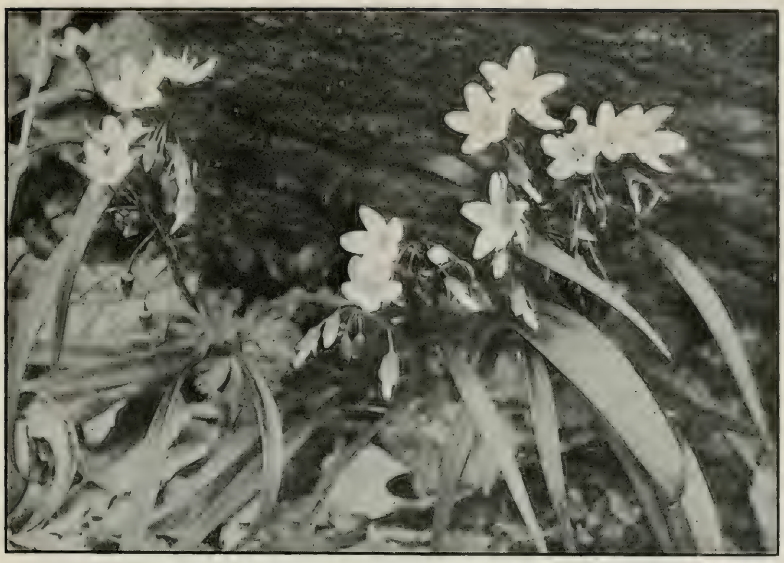
SKUNK CABBAGE (SPATHYEMA FOETIDA) ALONG CABIN JOHN RUN IN APRIL.

A. SPIDERWORT (TRADESCANTIA VIRGINIANA) ALONG THE POTOMAC.

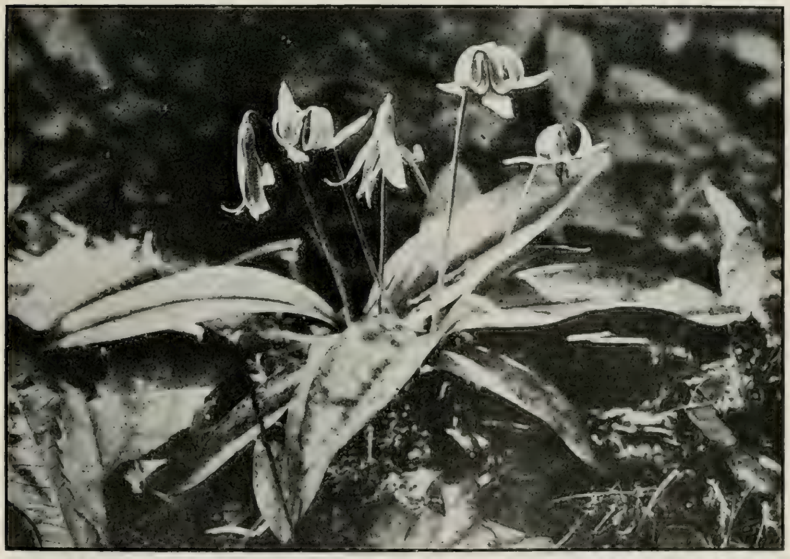
B CRESTED IRIS (IRIS CRISTATA) ALONG THE POTOMAC.



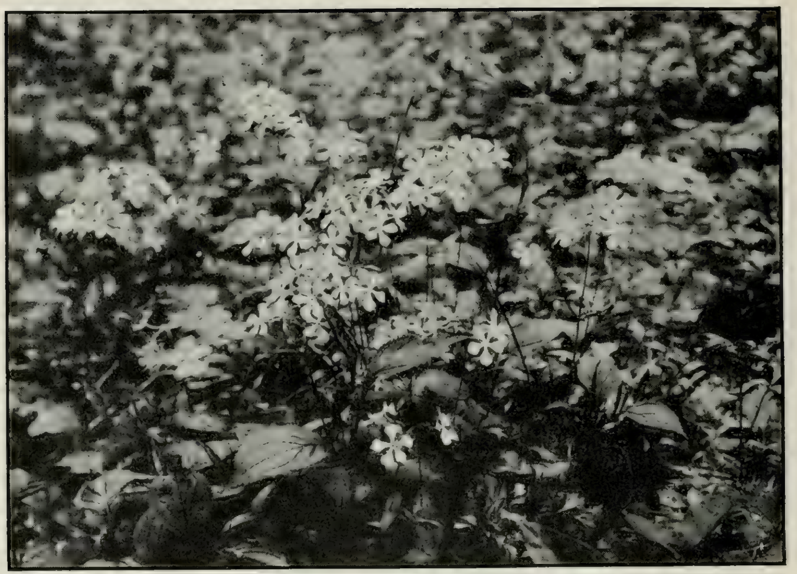
MARSH NEAR DYKE. PICKEREL-WEED (PONTEDERIA CORDATA) IN FOREGROUND.



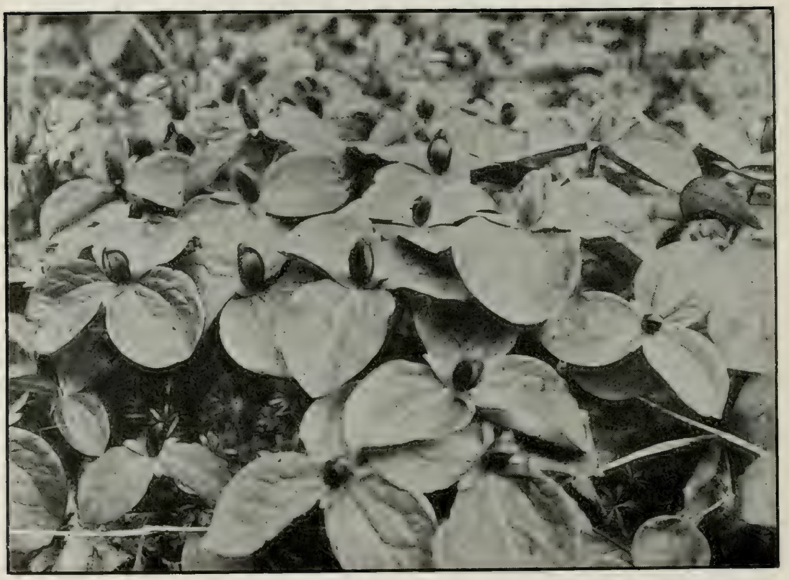
A. SPRING BEAUTY (CLAYTONIA VIRGINICA).



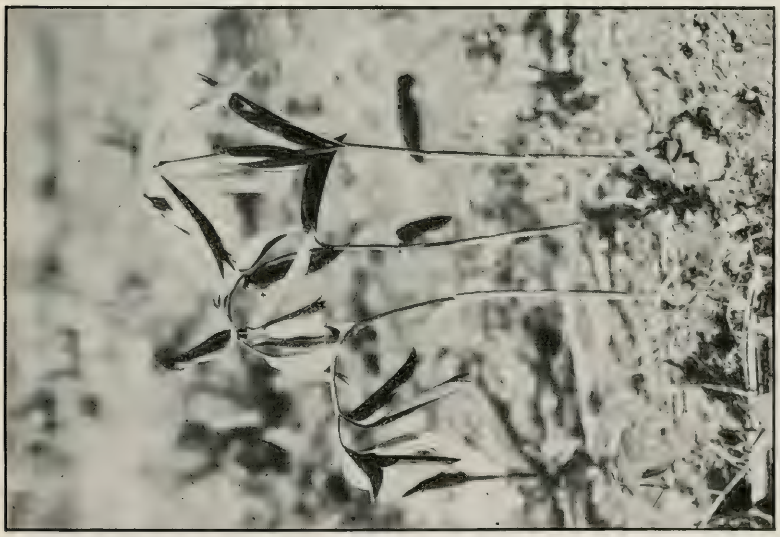
B. TROUT LILY (ERYTHRONIUM AMERICANUM).



A. BLUE PHLOX (PHLOX DIVARICATA).

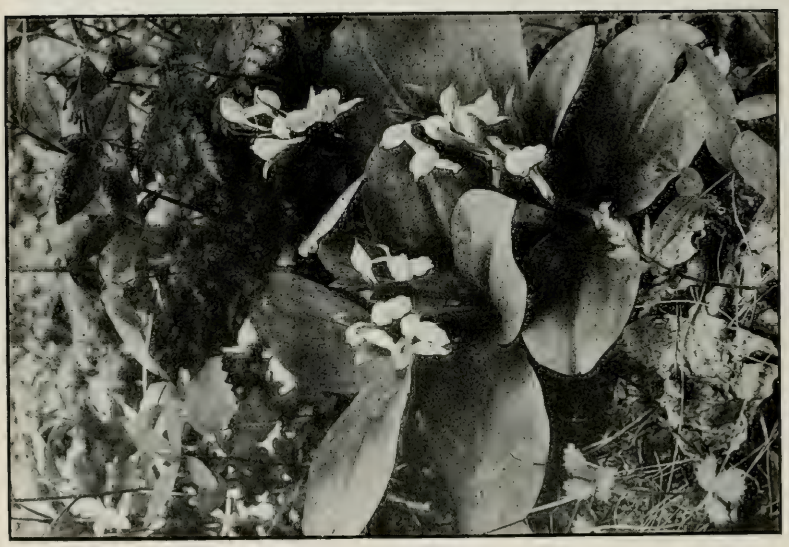


B. WAKE-ROBIN (TRILLIUM SESSILE).

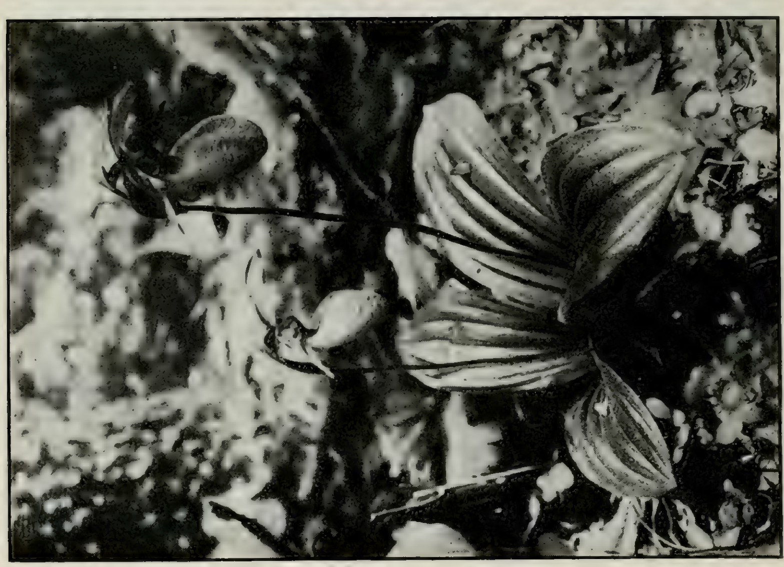


A. BELLWORT (UVULARIA SESSILIFOLIA).

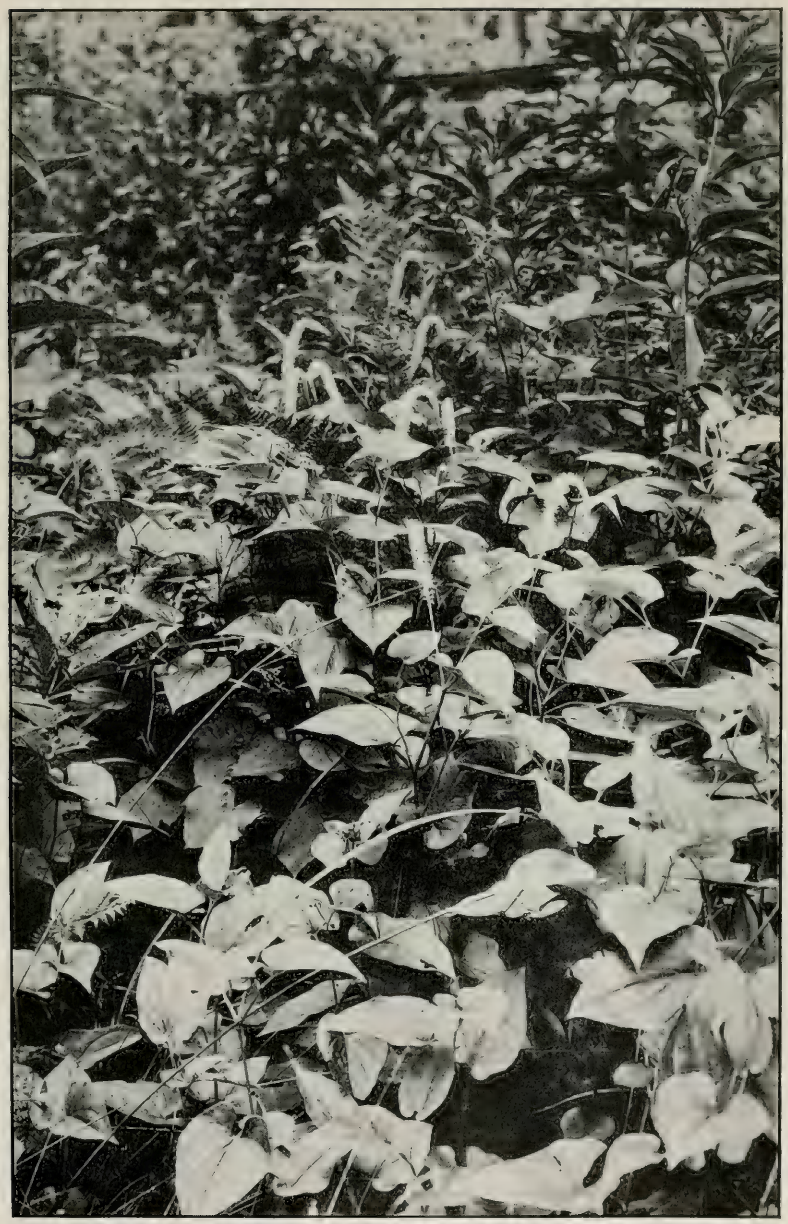
B. BLUE FLAG (IRIS VERSICOLOR).



A. SHOWY ORCHIS (ORCHIS SPECTABILIS.)

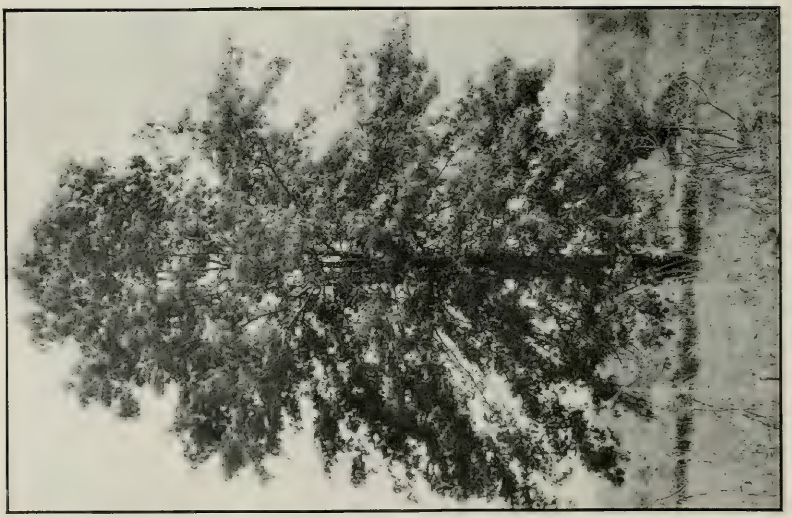


B. MOCCASIN FLOWER (CYPRIPEDIUM ACAULE).

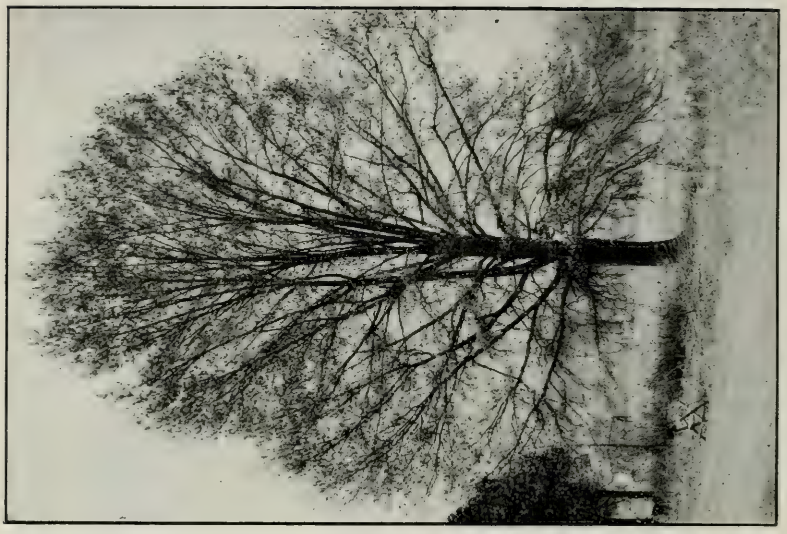


LIZARD'S-TAIL (SAURURUS CERNUUS) IN A SWAMP NEAR DYKE.

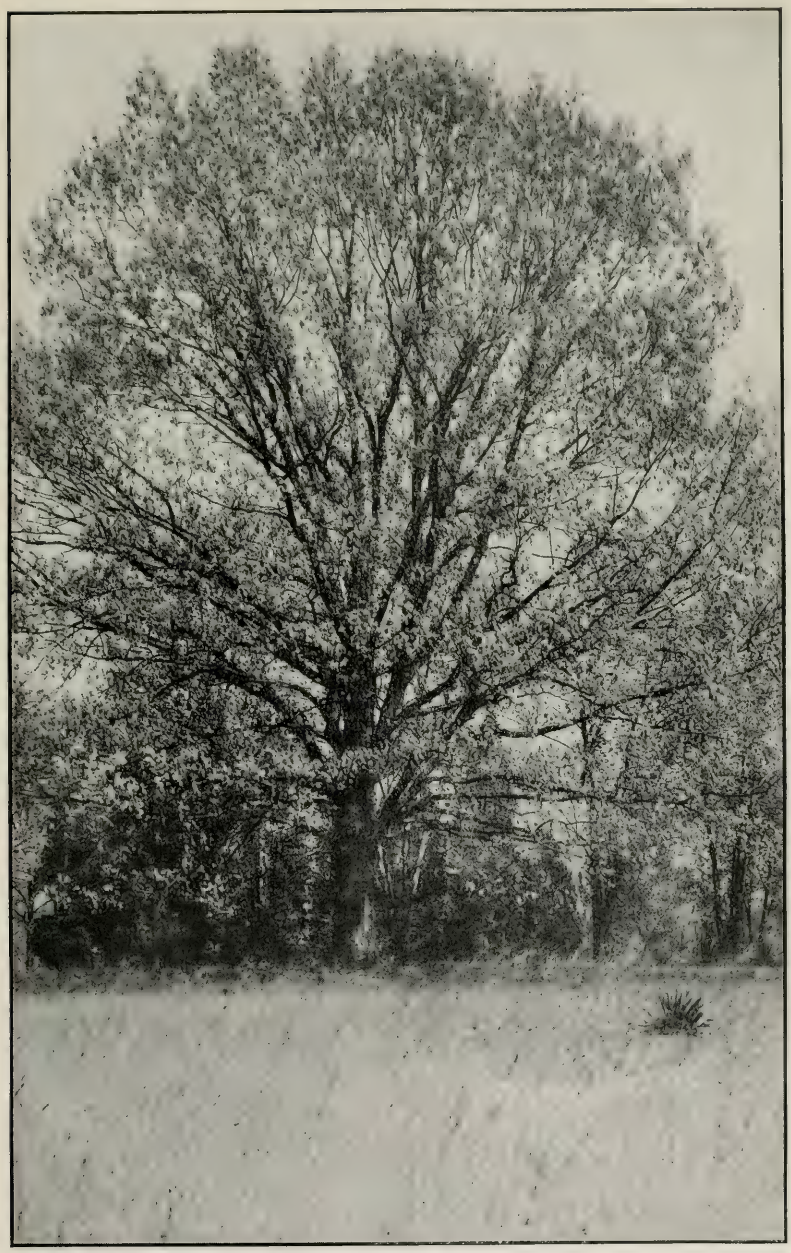
PLATE 22.



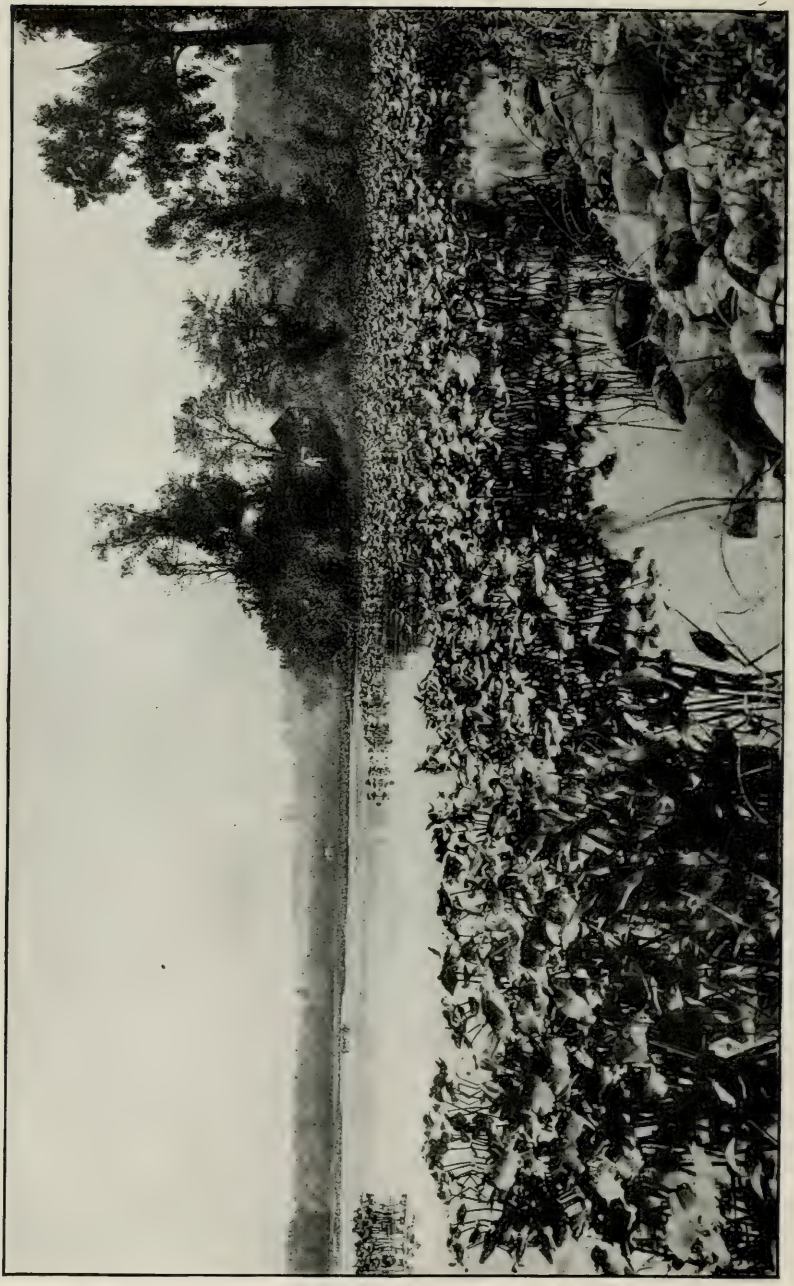
A. PIN OAK (QUERCUS PALUSTRIS) IN MAY



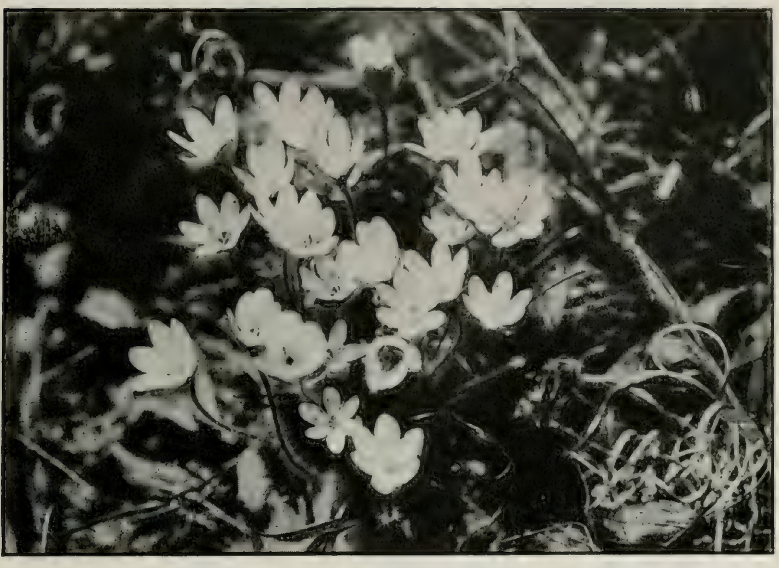
B. RED OAK (QUERCUS MAXIMA) IN MAY.



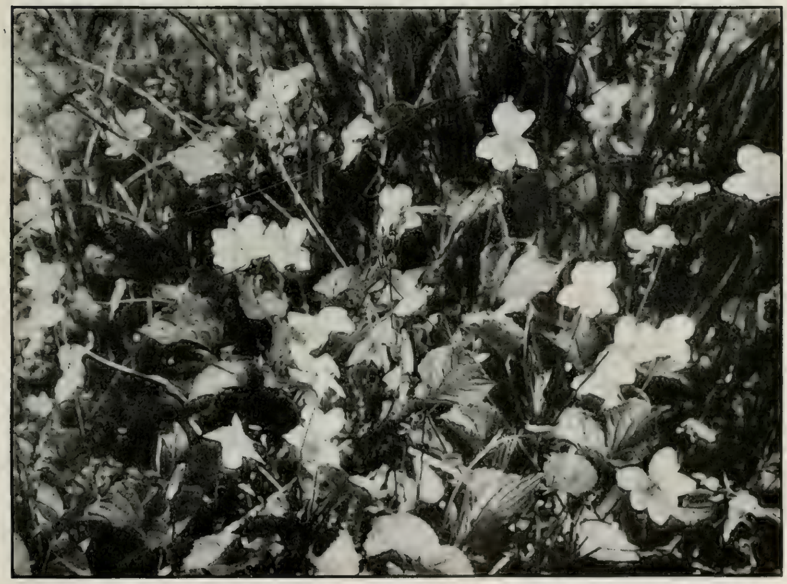
WHITE OAK (QUERCUS ALBA) IN MAY, A LAST YEAR'S GROWTH OF ANDROPOGON ELLIOTTII IN FOREGROUND.



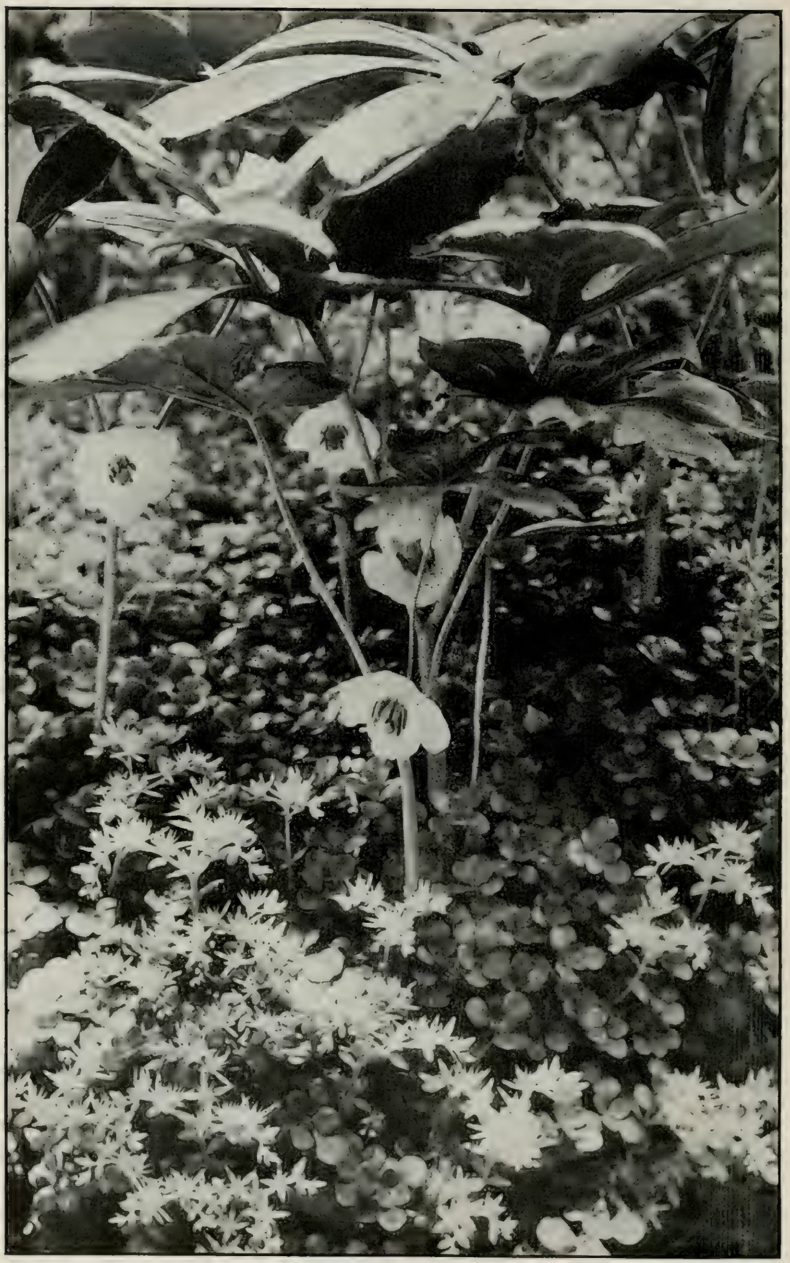
Yellow Pondlily (Nymphaea advena) in Shallow Water near Dyke.



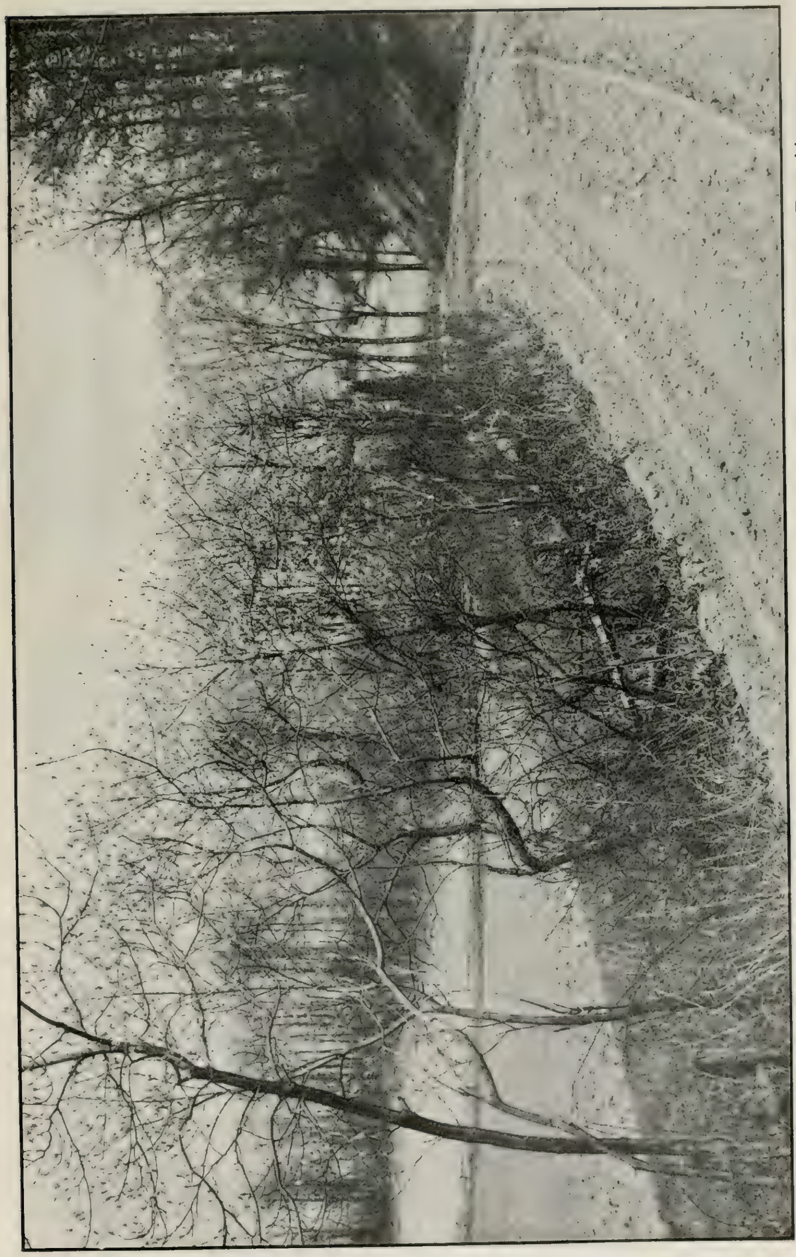
A. HEPATICA (HEPATICA AMERICANA).



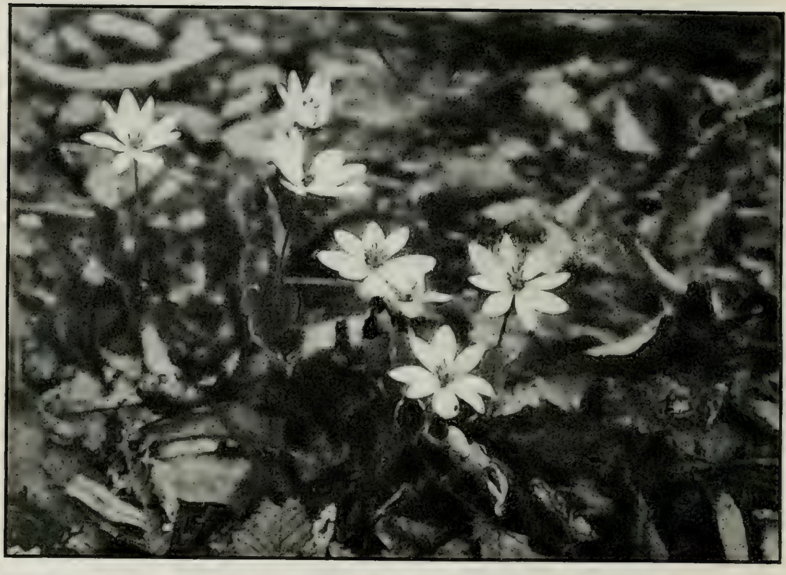
B. CREAM VIOLET (VIOLA STRIATA).



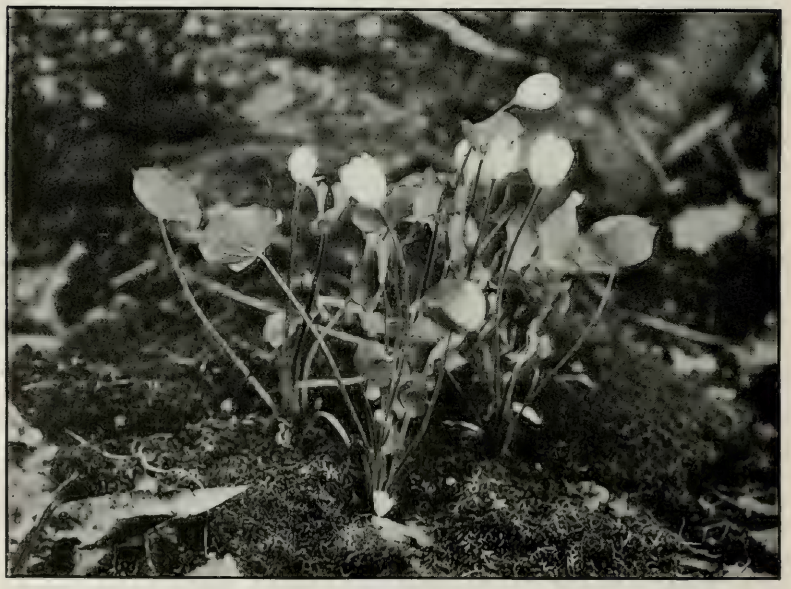
MAY-APPLE (PODOPHYLLUM PELTATUM) WITH THREE-LEAVED STONECROP (SEDUM TERNATUM) BELOW.



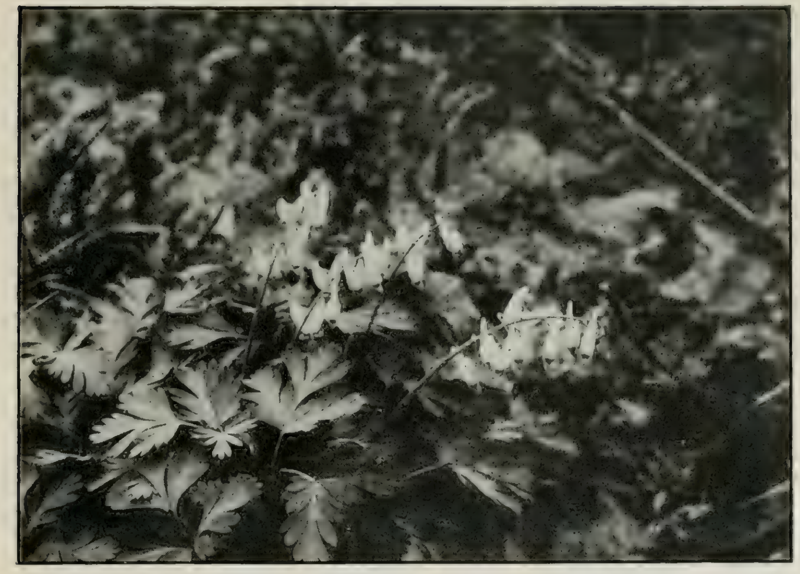
Sassafras (Sassafras variifolium), as it Occurs along Old Fence Rows in the Oxon Run Valley



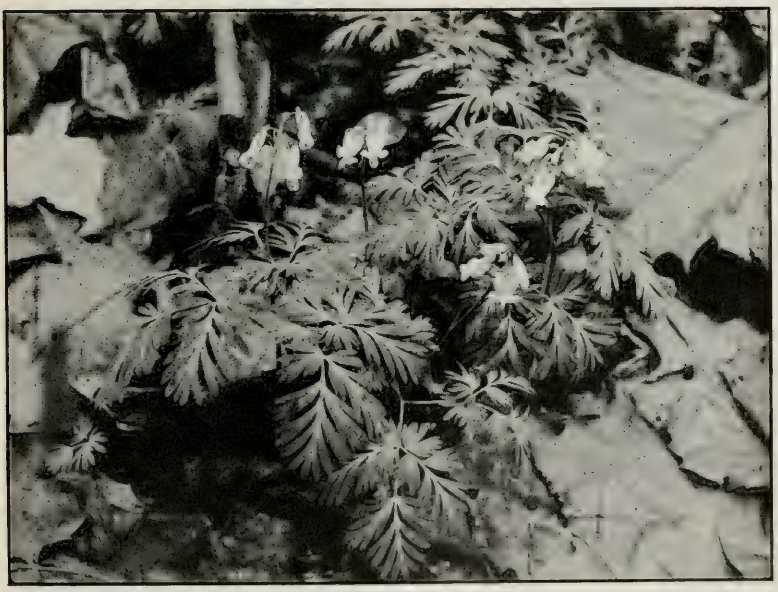
A. BLOODROOT (SANGUINARIA CANADENSIS).



B. TWIN-LEAF (JEFFERSONIA DIPHYLLA).



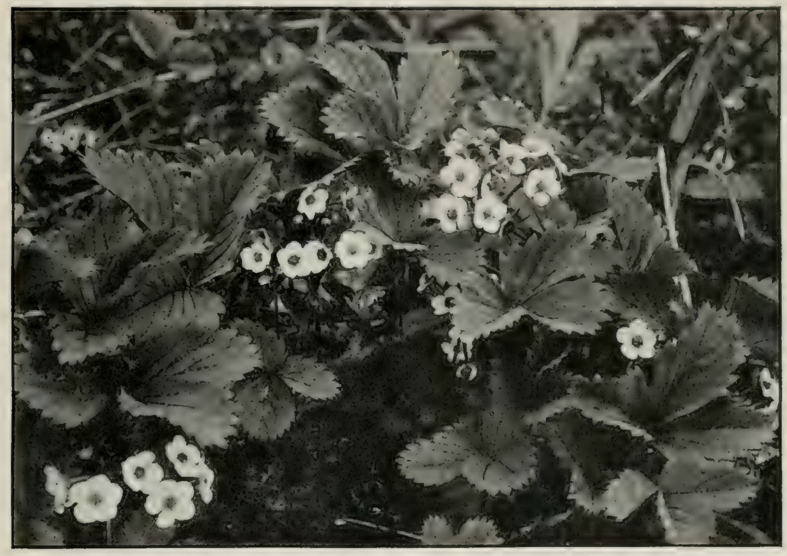
A. DUTCHMAN'S BREECHES (BIKUKULLA CUCULLARIA).



B. SQUIRREL CORN (BIKUKULLA CANADENSIS), LESS COMMON THAN THE PRECEDING.

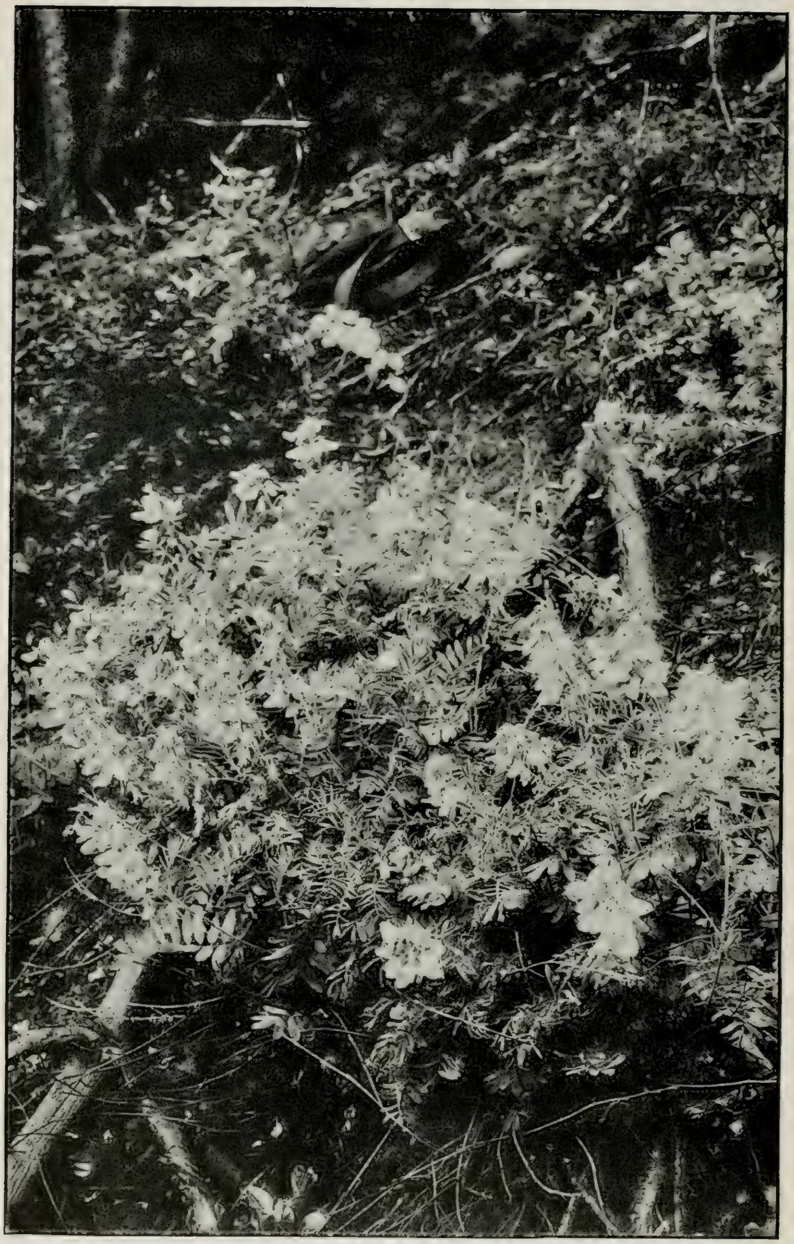
A. PEPPER-ROOT (DENTARIA LACINIATA).

B. SAXIFRAGE (SAXIFRAGA VIRGINIENSIS).

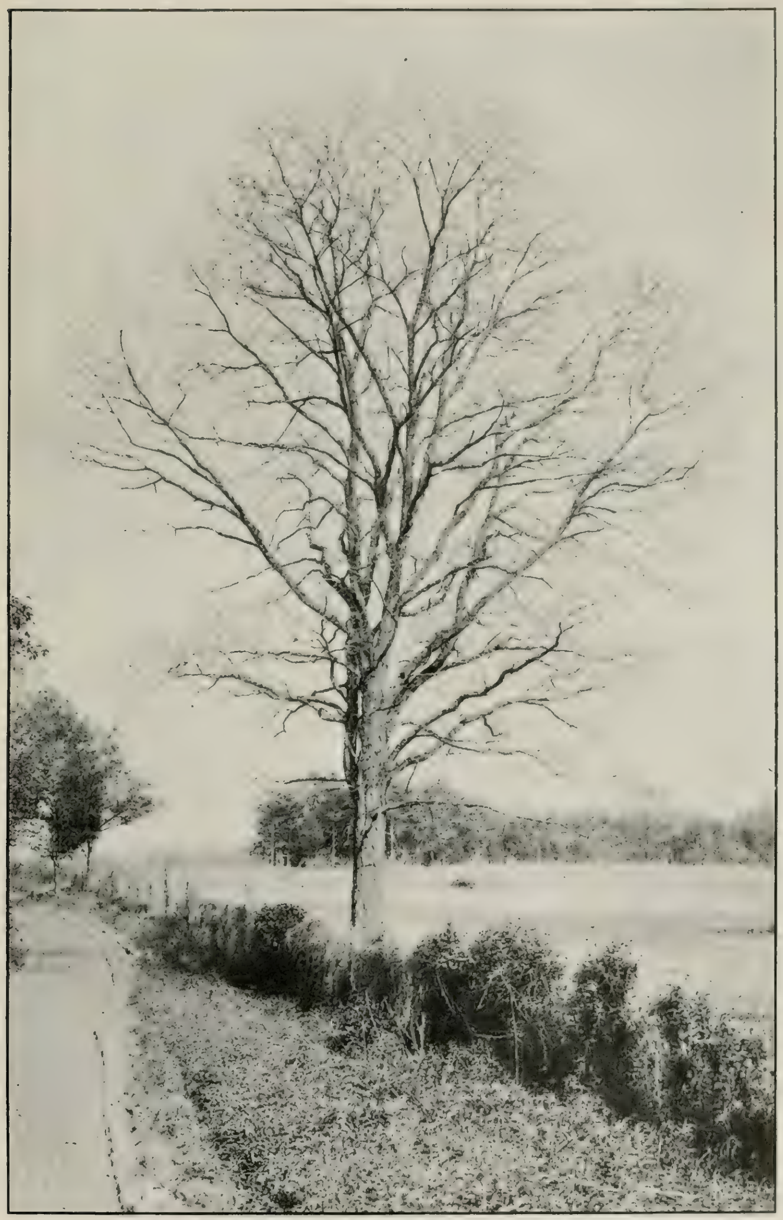


A. WILD STRAWBERRY (FRAGARIA VIRGINIANA).

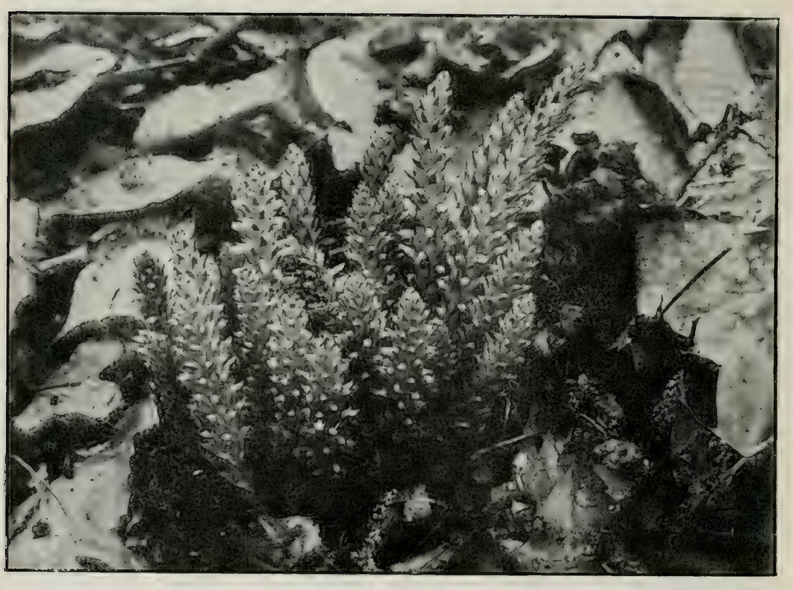
B. STAR CHICKWEED (ALSINE PUBERA).



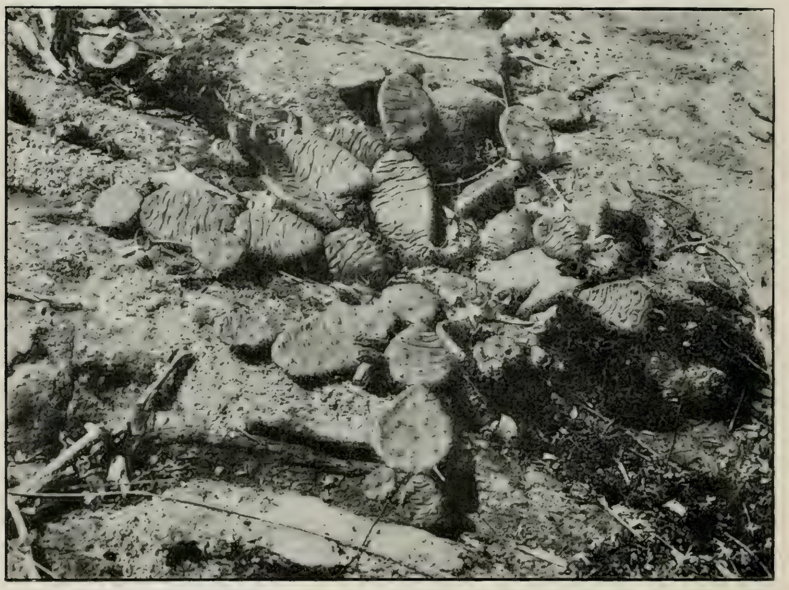
GOAT'S-RUE (CRACCA VIRGINIANA) IN ROCKY WOODS NEAR GREAT FALLS.



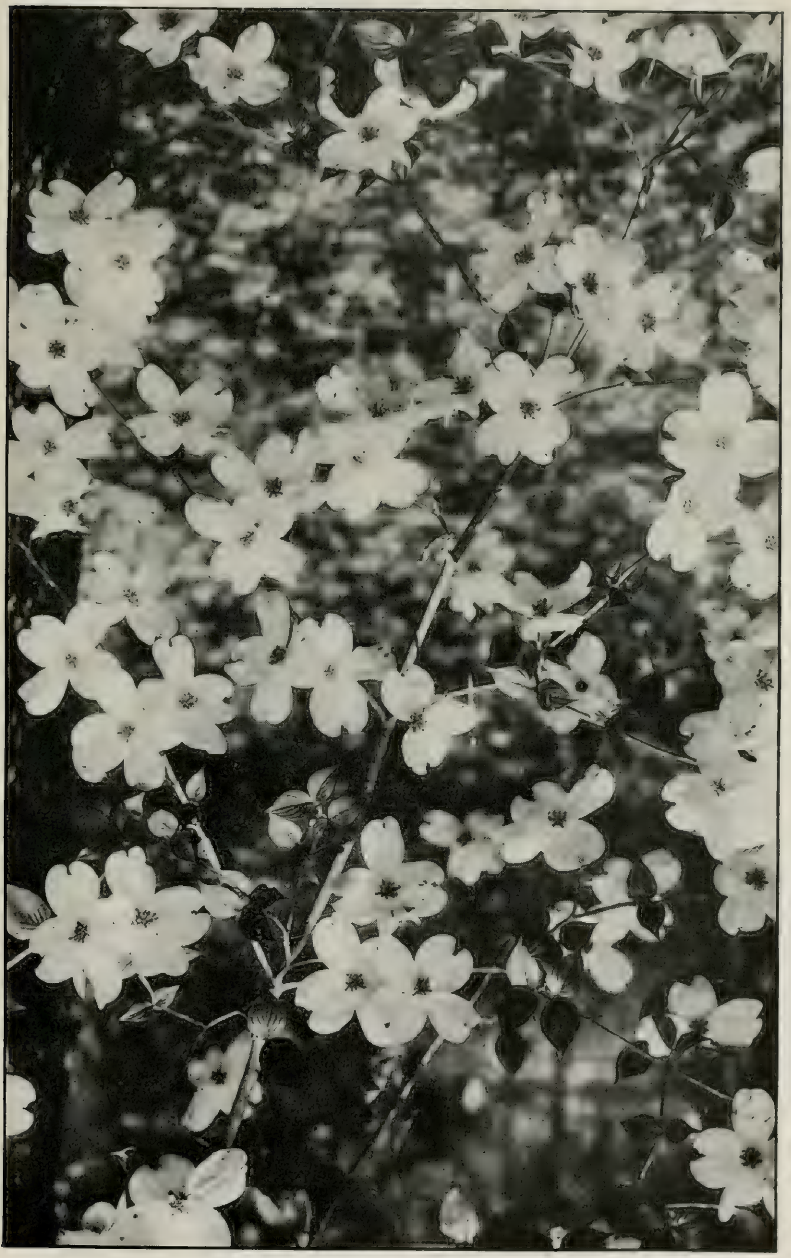
BLACK LOCUST (ROBINIA PSEUDO-ACACIA) IN MAY.



A. SQUAW-ROOT (CONOPHOLIS AMERICANA), A ROOT PARASITE.

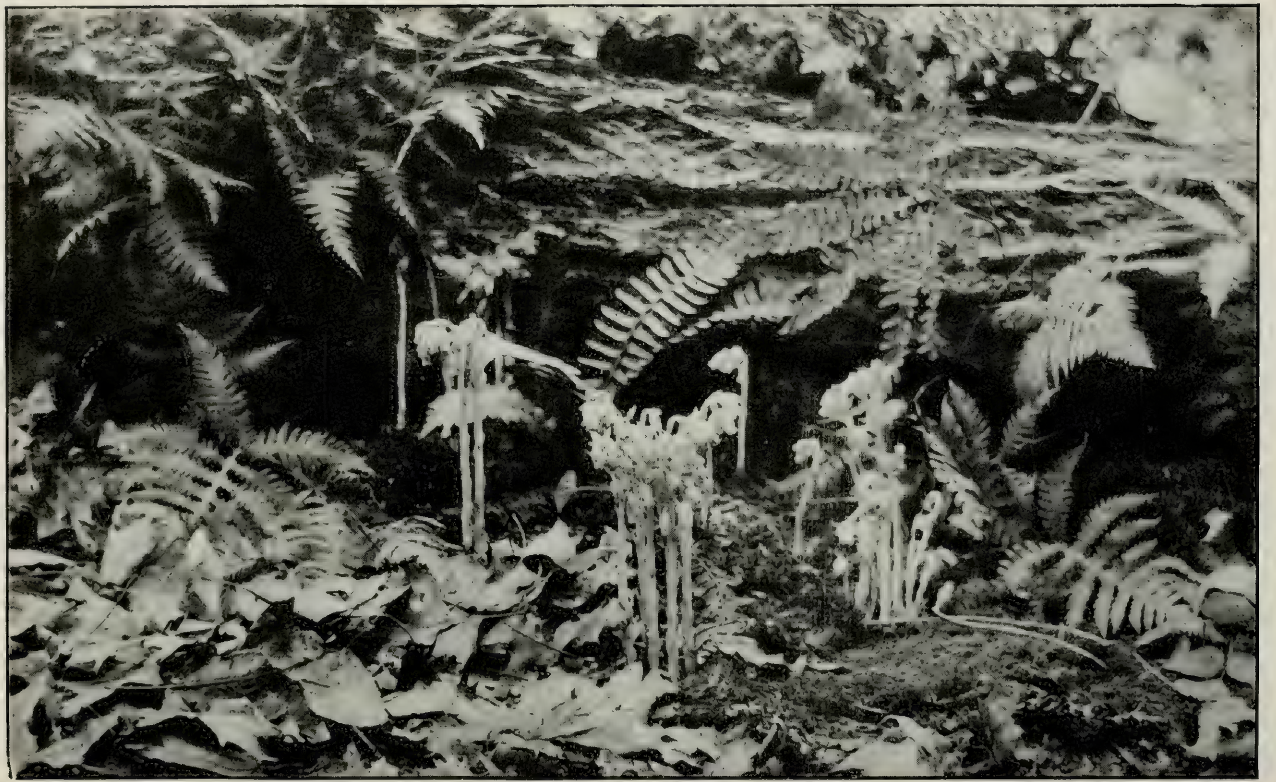


B. PRICKLY PEAR (OPUNTIA VULGARIS) ON PLUMMERS ISLAND.

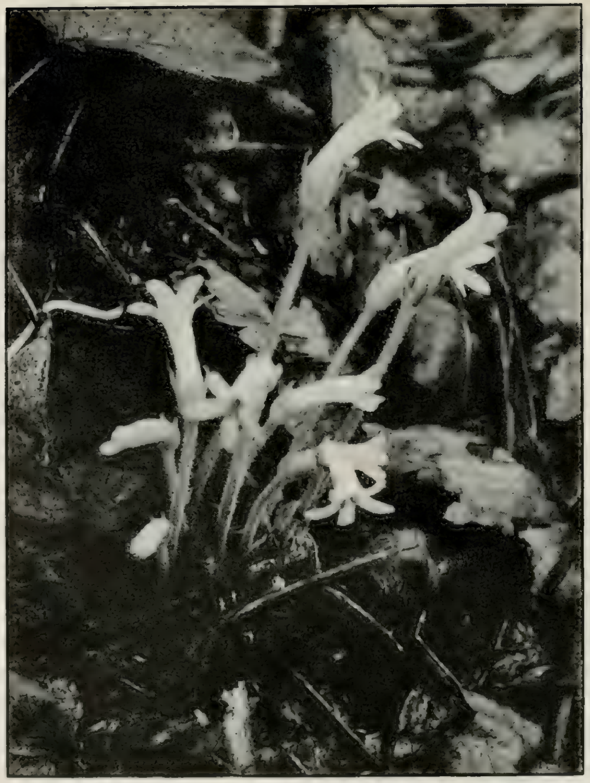


FLOWERING DOGWOOD (CORNUS FLORIDA).

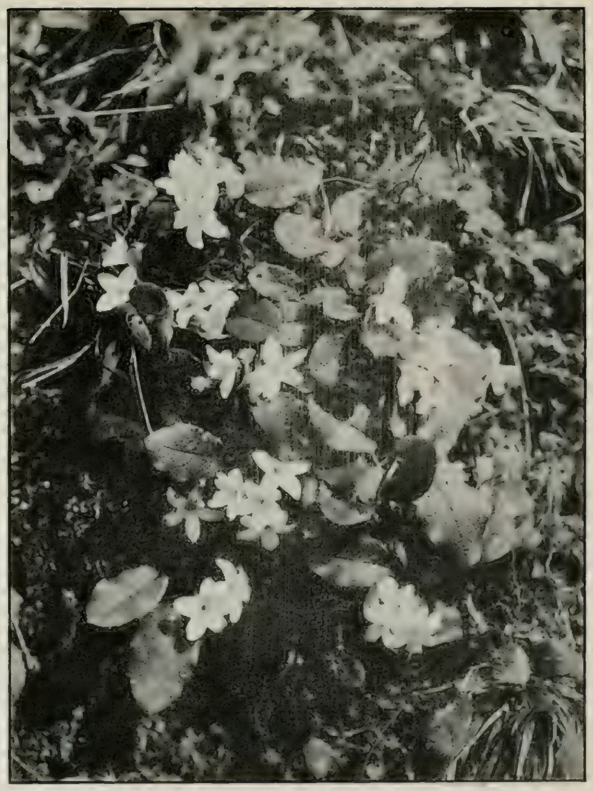
Plate 36.



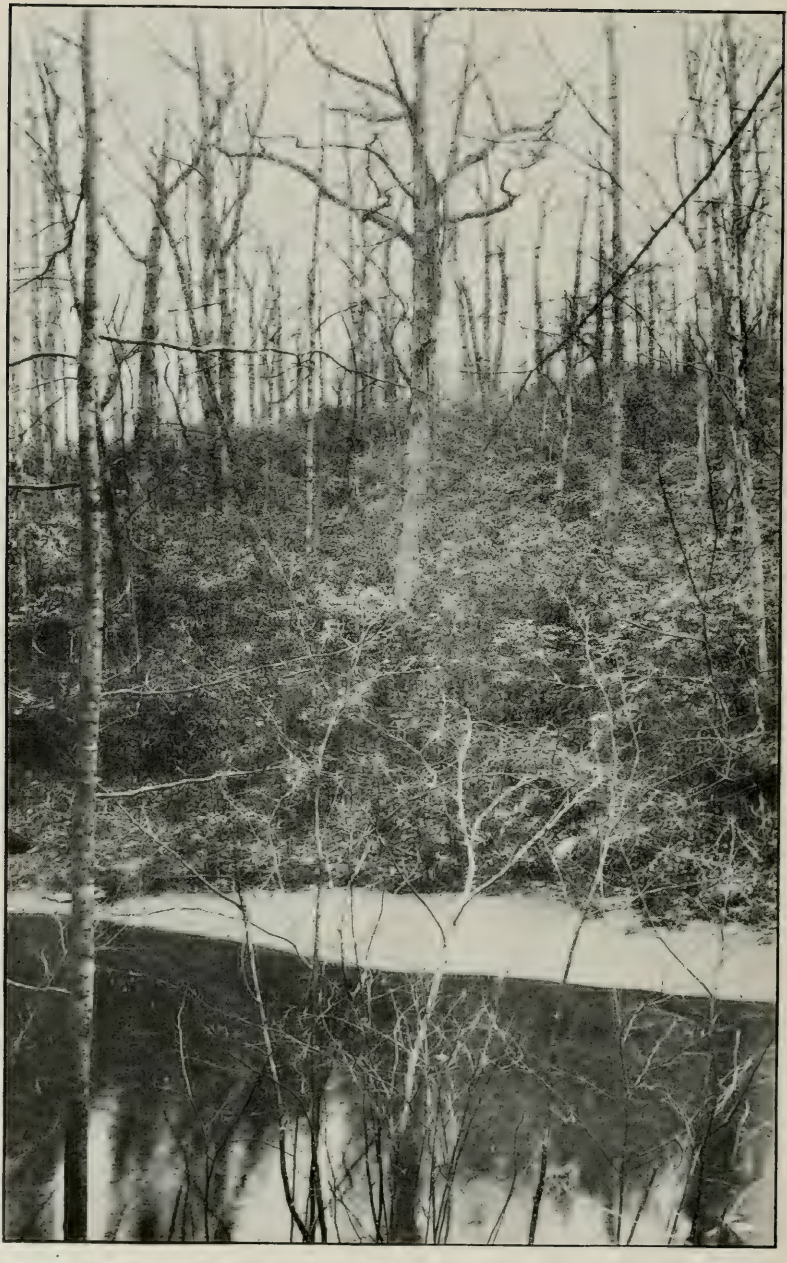
Pinesap (Hypopitys lanuginosa), a Root Parasite, with Maidenhair, Christmas Fern, and Beech Ferns.



A. Ghost-pipes (Thalesia uniflora), a Root Parasite.

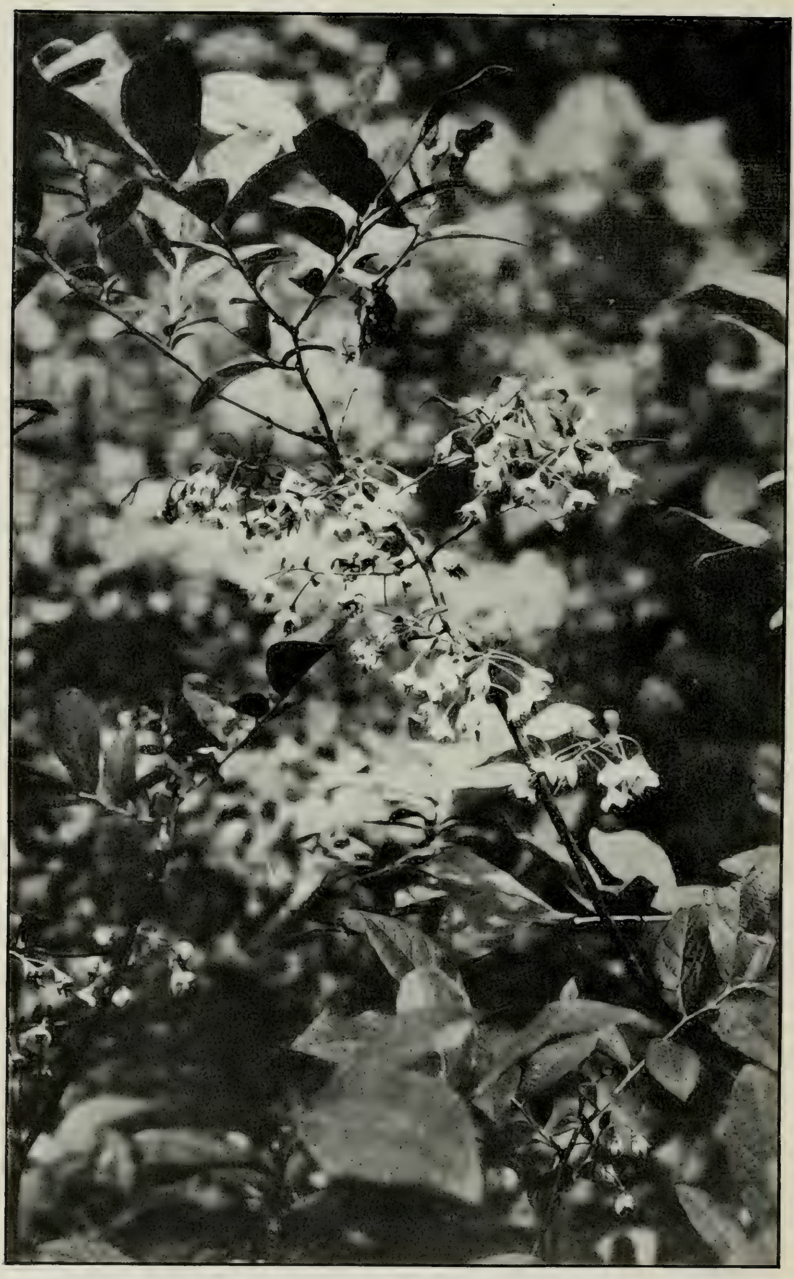


B. Trailing Arbutus (Epigaea repens).



THICKET OF LAUREL (KALMIA LATIFOLIA), ALONG CABIN JOHN RUN, IN APRIL.
LEAVES EVERGREEN.

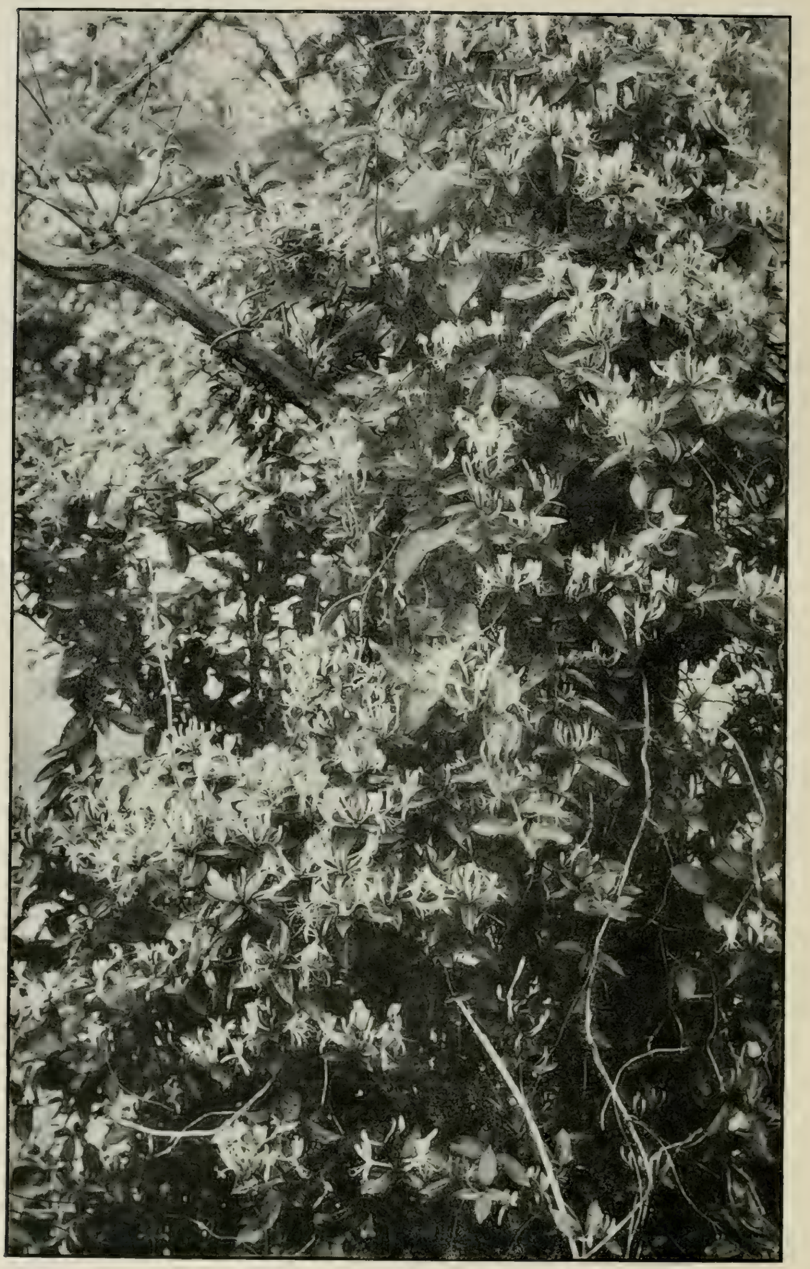
Laurel (Kalmia latifolia). Flowers White or Pink.



DEERBERRY (POLYCODIUM STAMINEUM). A CHARACTERISTIC SHRUB IN STERILE WOODS; FLOWERS WHITE.

A. BLUETS (HOUSTONIA COERULEA).

B. ROBIN'S PLANTAIN (ERIGERON PULCHELLUS)



JAPANESE HONEYSUCKLE (LONICERA JAPONICA), AN INTRODUCED VINE NOW ABUNDANT.

QK 153 H47 cop.2
Hitchock, Albert Spear
Flora of the District of Columbia and vicinity

BioMed

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